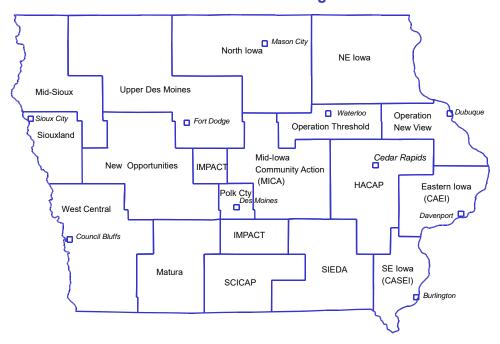
REPORT ON THE IMPACTS AND COSTS OF THE IOWA LOW-INCOME WEATHERIZATION PROGRAM -Calendar Year 2016

October 18, 2017

Iowa Local Weatherization Agencies



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Prepared for the

Iowa Statewide Low-Income Collaborative

by

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EXECUTIVE SUMMARY

This report summarizes the state and utility low-income weatherization program activity for low-income dwellings weatherized to completion in lowa during calendar year 2016 through the lowa Weatherization Assistance Program. The report includes state, utility, and agency summaries of spending and impacts by measure, end-use, and fuel type. The base data consists of statewide program tracking databases of spending and measure installations maintained by the lowa Division of Community Action Agencies. Fuel consumption histories were provided by the three co-funding utilities, including by Black Hills Energy, Interstate Power and Light Company, and MidAmerican Energy.

We estimated energy and coincident demand impacts for the program participants by using algorithms developed as part of the study of the calendar year 2007 program¹. The estimated impacts were adjusted using billing analysis of the program clients.

PROGRAM COSTS AND IMPACTS

The WAP program spent \$19,903,765 for materials, labor, and support while installing measures in 1,473 dwellings during calendar year (CY) 2016. Funding increased 6.9% from the prior year. Federal and state funding accounted for 69% of overall expenditures while utilities funded the remaining 31%.

The program expenditures for materials, labor, and support averaged \$13,512 in 2016 compared to \$12,310 in 2015 (a 9.7% increase). The major measures installed by the program in 2016 are essentially unchanged from the 2015 program.

First-year savings totaled 306,300 therms; 1,002,100 kWh electricity; 30,600 gallons of propane; and 977 gallons of fuel oil. First-year peak demand savings totaled 3,180 therms, 300 kW summer demand, and 260 kW winter demand.

Electricity savings averaged 685 kWh for 1,456 dwellings. The program saved an average of 245 therms of natural gas for 1,248 dwellings with gas impacts. In addition, the program delivered first-year savings of 241 gallons of propane in 127 dwellings with propane impacts, and 140 gallons of fuel oil in 7 dwellings with fuel oil impacts.

First-year client energy cost savings totaled \$385,900, averaging \$262 per housing unit.

¹ Dalhoff Associates, LLC. <u>Report on the Impacts and Costs of the Iowa Low-Income Weatherization Program – Calendar Year 2007, October 15, 2008.</u>

Program Savings

	Electricity (kWh and kW)			Natural Gas (therms)			Propane (gals)	Fuel Oil (gals)
	Overall	DCAA	Utility	Overall	DCAA	Utility	DCAA	DCAA
Energy	1,002,100	410,800	591,300	306,300	108,800	197,500	30,600	977
Summer Demand	300	120	180	NA	NA	NA	NA	NA
Winter Demand	260	110	140	3,180	1,120	2,060	NA	NA

Average Impacts¹ per Dwelling (for those receiving measures with a given fuel type)

	E	ectricity (kWh)	Natura	ıl Gas (the	erms)	Propane (gals)	Fuel Oil (gals)
	Overall	DCAA	Utility	Overall	DCAA	Utility	DCAA	DCAA
Energy	685	282	619	245	88	215	241	140
Summer Demand	0.208	0.084	0.191	NA	NA	NA	NA	NA
Winter Demand	0.176	0.079	0.150	2.6	0.9	2.2	NA	NA

Expenditures and First Year Client Fuel Bill Savings

Totals	Overall	DCAA	Utility	Averages	Overall	DCAA	Utility
Expenditures ²	\$19,903,800	\$13,769,200	\$6,134,500	Expenditures	\$13,510	\$9,350	\$5,470
Client Fuel Savings	\$385,900	\$167,100	\$218,700	Client Fuel Savings	\$262	\$114	\$195

¹ Average impacts are for dwellings that received the measures, and so the averages of the Utility and DCAA will not total to the statewide average

UTILITY EXPENDITURES AND IMPACTS

The three major investor-owned utilities that provide gas and electricity in Iowa, Alliant-IPL, MidAmerican Energy, and Black Hills Energy, contributed \$6,134,533 for weatherization measures, accounting for 31% of total program expenditures. The utility expenditures averaged \$5,470 for the 1,122 dwellings that received utility-funded measures.

Utility-funded measures saved a total of 591,300 kWh, averaging of 619 kWh of electricity for the 956 dwellings with utility-funded electricity measures. Utility funded measures also saved a total of 197,500 therms, averaging 215 therms of natural gas for the 919 dwellings with utility-funded natural gas measures. Utility-funded measures reduced peak electricity demand by 180 kW in the summer and 140 kW in the winter, and provided 2,060 peak-day therms of gas savings. Utility-funded measures accounted for 59% of program electricity savings and 65% of program gas savings.

Utility-funded measures yielded first-year client bill savings of \$218,700, averaging \$195 per dwelling that received utility-funded efficiency measures. Electricity bill savings averaged \$69 per household for utility-funded electricity measures. Gas bill savings averaged \$166 for those with utility-funded gas measures.

² Measure expenditures, exclues utility admin expenses

FUEL CONSUMPTION ANALYSIS RESULTS

The natural gas savings were first estimated using the measure-specific revised algorithms developed for the CY 2007 program, and then adjusted based upon a billing analysis of the weatherization clients. The factors were applied to the estimated electricity, natural gas, propane, and fuel oil heating measures, and to natural gas and propane water heater measures. Along with providing better assessments of agency-level impacts, this procedure also provides a check on the accuracy of the algorithms used to estimate savings.

Natural gas savings for single family site-built dwellings averaged 251 therms \pm 15 at 90% confidence. This represents a 25.1% savings \pm 1.3% at 90% confidence for natural gas measures. Mobile home savings averaged 162 therms \pm 31 at 90% confidence, equating to a 20.1% savings \pm 3.6%.

Electricity savings were initially estimated using algorithms developed from savings of the 2005 and 2006 program. These estimates were adjusted based upon a billing analysis of electricity impacts of the 2012 and 2013 programs. The billing analysis for the CY 2016 program found that savings averaged 2,711 kWh \pm 1,977 for dwellings with electric main heat, and 718 kWh \pm 234 for dwellings heated with other fuels.

CHANGES IN PROGRAM DELIVERY AND REPORTING

There were no significant changes in measures delivered for the CY 2016 program, as compared to the CY 2015 program.

Organization of the Report

Section 1, Summary of Program Impacts and Expenditures, provides the overall findings of the study, and relates these to prior year results. In addition, it provides broad summaries of impacts and costs for the agencies.

Section 2, Fuel Consumption Analysis and Assessment of Agency-Level Savings Adjustment Factors, details the methodology and results of the fuel consumption analysis. A standard comparison-adjusted pre/post weather-normalization methodology was used to assess impacts. A section was added at the end, entitled Comparison of Sample and Overall Program Populations.

Section 3, Detailed Spending and Impact Profiles by Funding Entity provides detailed result tables for the overall program, state funding, and for each of the three funding utilities. These tables include counts of installations and totals and average energy savings, demand impacts, and program expenditures by measure.

Section 4, Detailed Spending and Impact Profiles by Agency provides tables similar to those in Section 4 for each weatherization agency, for all measures installed.

Section 5, Detailed Spending and Impact Profiles by Agency for Utility Expenditures provides similar detail by agency, but is limited to measures funded by the utilities.

Appendix A provides a characterization of households and dwellings weatherized during 2016.

Appendix B provides tabular data of selected charts in Section 1 of the report.

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1. SUMMARY OF PROGRAM IMPACTS AND EXPENDITURES

This section begins with impacts and expenditures for the overall program, followed by results attributed to utility funding. Various agency-level results and measure-specific results are presented in the final part.

PROGRAM SAVINGS AND EXPENDITURES

A total of 1,473 dwelling units were weatherized to completion during calendar year (CY) 2016, compared to 1,514 in 2015. First-year savings totaled 306,300 therms; 1,002,100 kWh electricity; 30,600 gallons of propane; and 977 gallons of fuel oil. First-year peak demand savings totaled 3,180 peak-day therms, 300 kW summer demand, and 260 kW winter demand.

First year natural gas savings are shown for the past ten years, by major measure groups in Figure 1.1 (raw data is listed in Appendix B as Fig 1.1).

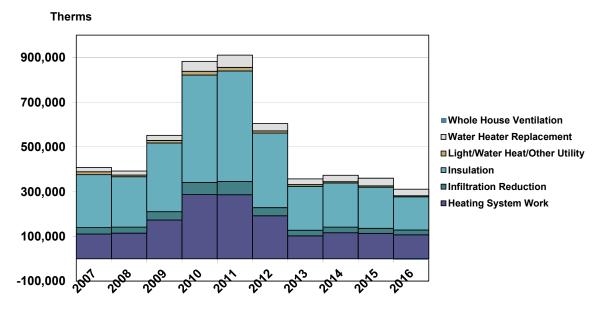


Figure 1.1 First Year Energy Savings (therms) – Program

Taken together, insulation and heating system replacement work accounted for 84% of gas savings (Table 1.1). Note that the portion of infiltration reduction savings (7% of gas savings) shown here is attributed to weather-stripping and leak sealing -- the bulk of air leakage savings are allocated to dense packed wall and cavity insulation and are included in insulation savings shown for those measures.

Table 1.1 Gas Measure Savings by Major Measure Category

Measure Group	Savings (therms)	Pct
Heating System Work	107,412	35.1%
Infiltration Reduction	20,948	6.8%
Insulation	148,756	48.6%
Light/Water Heat/Other Utility	4,403	1.4%
Water Heater Replacement	29,679	9.7%
Whole House Ventilation	-4,936	-1.6%

Electricity savings totaled 1,102,100 kWh for the program overall (Figure 1.2, raw data in Appendix B listed as Fig 1.2).

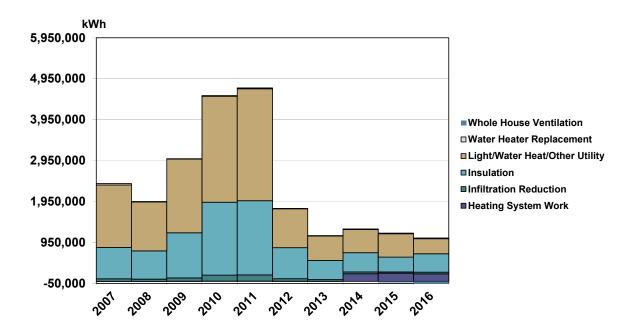


Figure 1.2 First Year Energy Savings (kWh) – Program

Insulation measures were credited with 45% of electricity savings (includes cooling savings and heating savings for homes with electric heat). Lighting, electric water measure, and refrigerator and freezer replacements and removals accounted for 37%. Other heating system work (primarily electric heating system and heat pump replacements) were responsible for 19% of savings.

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Table 1.2 Electricity Savings by Major Measure Category

Measure Group	Savings (kWh)	Pct
Heating System Work	185,546	18.5%
Infiltration Reduction	41,401	4.1%
Insulation	446,239	44.5%
Light/Water Heat/Other Utility	371,009	37.0%
Water Heater Replacement	17,269	1.7%
Whole House Ventilation	-59,517	-5.9%

Program expenditures for materials, labor, and support totaled \$19,903,775, increasing by 7 percent from \$18,615,919 spent in 2015 (see Figure 1.3; raw data is listed in Appendix B as Fig 1.3).

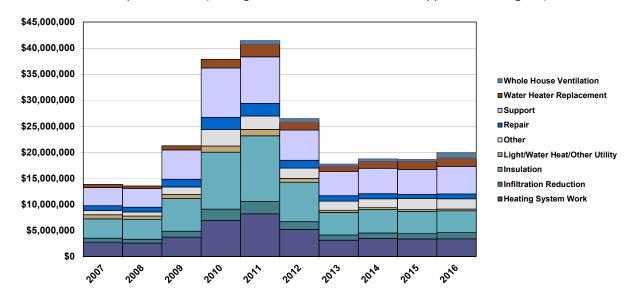


Figure 1.3 Overall Program Expenditures

Expenditures by major measure groups are shown in Table 1.3. Program support, which funds agency overhead and administration, accounted for 26.6% of expenditures. Efficiency measures, including heating system work (replacements, repairs, and tune-ups), infiltration reduction, insulation, lighting and water heater efficiency measures, and water heater replacement accounted for 53.6% of expenditures. The remainder of costs including repairs, whole house ventilation, and health and safety measures which together total 19.8%.

Table 1.3 Expenditures by Major Measure Category

Measure Group	Expenditure	Pct
Heating System Work	\$3,390,913	17.0%
Infiltration Reduction	\$1,182,412	5.9%
Insulation	\$4,188,388	21.0%
Light/Water Heat/Other Utility	\$328,738	1.7%
Other	\$1,982,511	10.0%
Repair	\$930,041	4.7%
Support	\$5,302,237	26.6%
Water Heater Replacement	\$1,579,574	7.9%
Whole House Ventilation	\$1,018,951	5.1%

The nominal average household expenditures for all dwellings weatherized in 2016 increased by 10% to \$13,542 (Figure 1.4, raw data is listed in Appendix B listed as Fig 1.4).

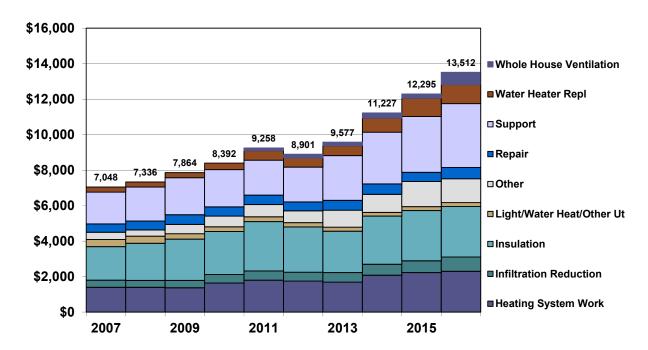


Figure 1.4 Average Program Expenditures per Housing Unit

CLIENT ENERGY BILL SAVINGS BY FUEL TYPE AND END-USE

Fuel prices were taken from the Departmesnt of Energy's Energy Information Agency (EIA) state monthly average prices for electricity and natural gas, and seasonal fuel costs for propane and fuel oil. The savings for each measure are allocated by month so that the estimated bill savings reflect the seasonal fluctuations in fuel prices. State taxes are included and electricity and gas prices are adjusted to include only the variable cost of an additional kWh or therm (fixed portion of the bills for customer charges are

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removed). Electricity prices increased by 2.1% from 2015, gas prices increased by 7%, fuel oil prices increased by 19%, and propane prices dropped by 33%.

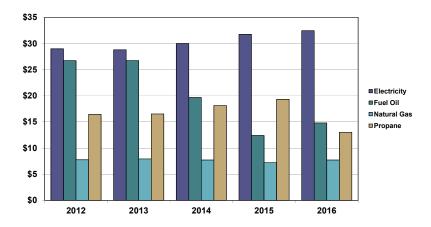


Figure 1.5 Average Fuel Cost per MBtu (Nominal Dollars)

The nominal first year client energy bill savings totaled \$385,800 (Figure 1.6, raw data in Appendix B listed as Fig 1.6).

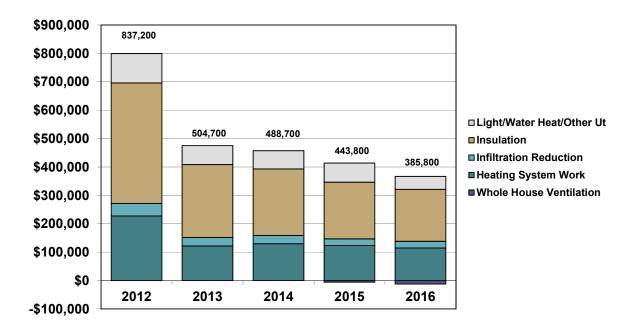


Figure 1.6 First Year Client Fuel Cost Savings (Nominal Dollars)

Insulation, infiltration reduction, and heating system work accounted for 83% of client bill savings (Table 1.6). Lighting, water heating measures, and refrigeration measures accounted for 12%.

Table 1.6 First Year Client Fuel Cost Savings (Nominal Dollars)

Measure Group	Bill Savings	Pct
Whole House Ventilation	-\$12,094	-3.1%
Heating System Work	\$114,855	29.8%
Infiltration Reduction	\$23,425	6.1%
Insulation	\$183,128	47.5%
Light/Water Heat/Other Ut	\$45,384	11.8%
Water Heater Replacement	\$31,142	8.1%

First-year client fuel bill savings averaged \$262 (Figure 1.7), declining from \$293 in 2015.

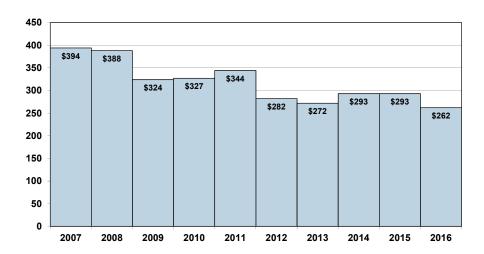


Figure 1.7 Average Annual Client Fuel Bill Savings per Housing Unit

Natural gas savings provided 61% of client bill savings, electricity accounted for 29%, propane accounted for 10%, and fuel oil provided less than 1%.

Approximately 46% of client bill savings are attributable to the heating impacts of shell measures (insulation and infiltration reduction), and 25% was due to heating system work. Taken together, heating impacts from shell improvements and heating system measures accounted for 71% of total client bill savings. Cooling savings accounted for another 10% and lighting, refrigeration, and water heater measures accounted for 10%.

Table 7 provides a breakdown of first year energy and bill savings, and expenditures by housing type and main heat fuel. Expenditures for site built single family units averaged over \$13,000 for gas and propane heated units, and had total savings of \$260 for gas-heated units and \$371 for propane-heated units. Costs for fuel-oil and electrically-heated site built homes were a little more than \$11,000 with bill savings of \$377 and \$290, respectively.

Total costs were highest for propane heated mobile homes at \$14,924 per unit and had first year bill savings totaling \$250. Gas-heated mobile homes averaged slightly less than \$13,000 and saved \$164 per

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unit. Costs were lower for fuel oil and electrically heated mobile homes (\$7053 and \$8,556), and saved a total of \$236 (fuel oil) and \$46 (electrically-heated).

Expenditures for multi-family units heated with gas averaged \$12,527 and had first-year client bill savings of \$233. Electrically-heated multi-family unit spending averaged \$6,078 and saved \$116.

Table 1.7 First Year Energy and Bill Savings, and Expenditures by Housing Type and Main Heat Fuel

		Main		Main		
		Heat	Electricity	Heat	Electricity	
	Number of	Savings	Savings	Bill	Bill	Expenditures
	Units	(therms, gals)	(kWh)	Savings	Savings	
Site Built Single Family						
Gas	1,109	252	588	\$194	\$66	\$13,871
Propane	115	250	650	\$298	\$73	\$13,093
Fuel Oil	6	148	646	\$304	\$73	\$11,415
Electiricty	68	-	2,780	-	\$290	\$11,184
Mobile Home						
Gas	100	154	422	\$118	\$46	\$12,968
Propane	12	152	620	\$181	\$69	\$14,924
Fuel Oil	1	90	468	\$185	\$51	\$7,053
Electiricty	4	-	440	-	\$46	\$8,556
Multi-Family						
Gas	49	241	422	\$186	\$47	\$12,527
Propane	-	-	-	-	-	-
Fuel Oil	-	-	-	-	-	-
Electiricty	9	-	1,114	-	\$116	\$6,078

UTILITY SAVINGS AND EXPENDITURES

The utilities funded measures in 1,122 dwellings, with first year savings totaling 197,500 therms and 591,300 kWh. These measures reached 76% of all units weatherized by the program, and accounted for 64.5% of gas savings and 59% of electricity savings.

Figure 1.8 provides a ten year history of gas savings attained by utility-funded measures (Figure 1.8, raw data in Appendix B listed as Fig 1.8).

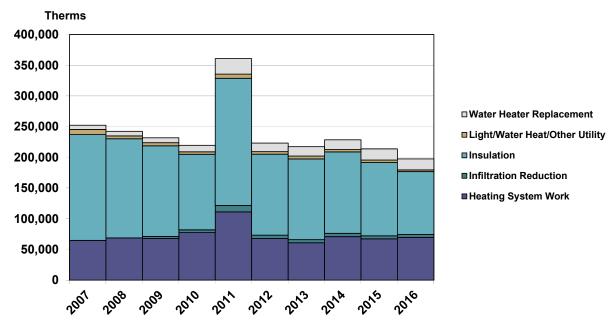


Figure 1.8 First Year Energy Savings (therms) - Utility only

Utility expenditures on gas measures were mostly due to insulation (52% of expenditures) and heating system work (35%). The heating system work was almost entirely for replacements, all of which were specified as replacements for efficiency (Table 1.8).

Figure 1.8 First Year Energy Savings (therms) by Measure Group – Utility only

Measure Group	Savings (therms)	Pct
Heating System Work	69,667	35.3%
Infiltration Reduction	4,784	2.4%
Insulation	102,315	51.8%
Light/Water Heat/Other Utility	2,809	1.4%
Water Heater Replacement	17,885	9.1%

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The ten year history of electricity measure savings are shown in Figure 1.9, with first year savings totaling 591,300 kWh in 2016 (Figure 1.9, raw data in Appendix B listed as Fig 1.9).

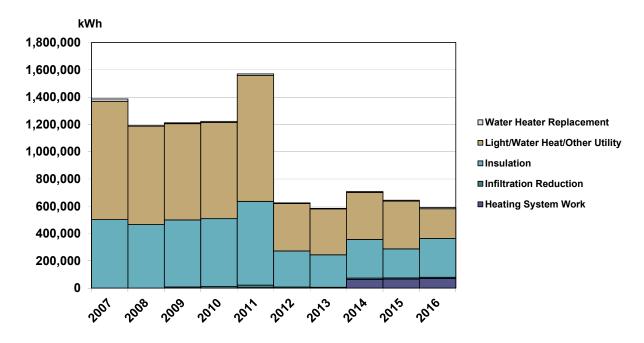


Figure 1. 9 First Year Energy Savings (kWh) – Utility only

The electricity savings attributed to insulation include cooling savings and heating savings in units with electric main heat; these accounted for 48% of electricity savings. Another 37% of electricity savings were due to lighting, refrigerator replacements or removals, electric water heater measures (Table 1.9).

Table 1.9 First Year Energy Savings (kWh) by Measure Group – Utility only

Measure Group	Savings (kWh))	Pct
Heating System Work	71,506	12.1%
Infiltration Reduction	8,430	1.4%
Insulation	283,722	48.0%
Light/Water Heat/Other Utility	218,339	36.9%
Water Heater Replacement	9,119	1.5%

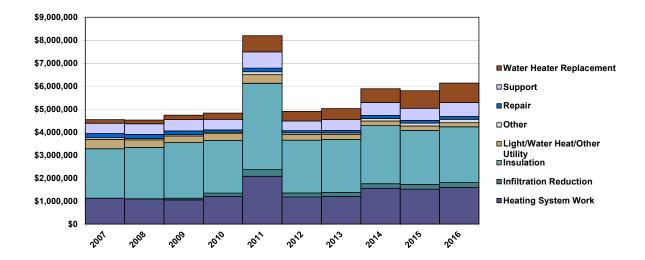


Figure 1.10 Utility Expenditures

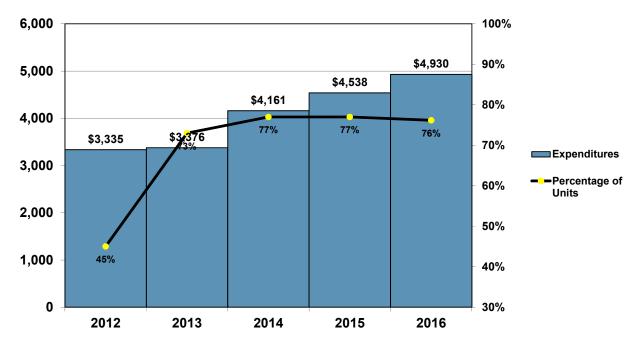
The utilities spent \$6,134,533 for program measures, labor, and support in 2016, 5.7% more than in 2015 (\$5,801,658). (Figure 1.10, raw data is listed in Appendix B as Fig 1.10). Utility expenditures accounted for 30.8% of the total low-income program expenditures.

Table 1.9 Expenditures by Measure Group – Utility only

Measure Group	Expenditure	Pct
Heating System Work	\$1,594,196	26.0%
Infiltration Reduction	\$212,265	3.5%
Insulation	\$2,422,997	39.5%
Light/Water Heat/Other Utility	\$180,770	2.9%
Other	\$147,766	2.4%
Repair	\$123,880	2.0%
Support	\$602,760	9.8%
Water Heater Replacement	\$849,809	13.9%

In addition, the utilities spent \$274,662 on program administration. Utility expenditures totaled \$6,409,195 including spending on program measures, labor, support, and administration.

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Note: Averages exclude support and administration expenditures

Figure 1.11 Average Utility Spending on Materials and Labor (excluding Support and Administration), and Percentage of Homes Receiving Utility-Funded Measures with Impacts

Figure 1.11 provides the average utility funding for labor and materials (excluding support and administration) and percentages of dwellings with utility funding for the past five years. The utilities have maintained funding for 76-77% of all units completed by the program for the past three years.

Table 1.11 provides details of utility expenditures and the percentage of units weatherized by the program for each utility.

Table 1.11 Utility Expenditures for Measures, Labor, and Support, and Counts of Units with Impacts

	Total Expenditures	Counts of Dwellings With Energy Impacts				
	Excluding With Program	Electric				
Utility	Program Support Support	Impacts Pct of Prg Gas Impacts Pct of Prg				
Alliant IPL	\$ 2,728,800 \$ 3,032,700	568 38.8% 419 33.6%				
Black Hills Corp	\$ 555,700 \$ 614,700	130 10.4%				
MidAmerican	\$ 2,247,200 \$ 2,487,200	387 26.5% 370 29.6%				
Total Utilities	\$ 5,531,800 \$ 6,134,500	956 65.3% 919 73.6%				

The savings and client bill savings for utility-funded measures are summarized in Table 1.12, by utility.

Table 1.12 First Year Fuel and Client Bill Savings Impacts from Utility-Funded Measures

					-			
			Summer		Winter		First Year	
	First Yr Fuel		Demand		Demand		Fuel Cost	
Utility	Savings	Pct of Prg	Savings	Pct of Prg	Savings	Pct of Prg	Savings	Pct of Prg
Electricity	(kWh)		(kW)		(kW)			
Alliant IPL	310,100	30.9%	100	32.7%	70	27.0%	\$ 34,600	31.2%
MidAmerican	280,800	28.0%	80	27.3%	74	28.5%	\$ 31,100	28.1%
Total Electric Utilities	591,300	59.0%	180	60.0%	143	55.6%	\$ 65,800	59.3%
					Peak Day			
Gas	Therms				Therms			
Alliant IPL	93,200	30.4%			980	30.7%	\$ 72,000	30.5%
Black Hills Corp	18,800	6.2%			190	6.1%	\$ 14,600	6.2%
MidAmerican	85,500	27.9%			890	27.9%	\$ 66,300	28.1%
Total Gas Utilities	197,500	64.5%			2,060	64.7%	\$ 153,000	64.7%

Utility-funded measures yielded first-year client bill savings of \$218,700, averaging \$195 per dwelling that received utility-funded measures. Electricity bill savings from utility-funded measures averaged \$69 per household for utility-funded electricity measures. Gas bill savings from utility-funded measures averaged \$166 for households with utility-funded gas measures.

Table 1.13 provides the cost of energy savings by housing type and utility for energy savings measures. The cost of conserved energy for across all housing types ranged from \$21.15 to \$27.32 per therm (first year savings) and \$1.15 to \$1.56 per kWh for the utilities. The cost of energy savings for mobile homes is significantly higher than for single family site-built or multi-family units for all fuels.

Table 1.13 Cost of First-Year Energy Savings from Utility-Funded Measures

	Cost of Gas Savings (\$/therm)	Number of Units	Cost of Elec Savings (\$/kWh)	Number of Units
Alliant-IPL				
Overall	\$22.16	419	\$1.56	569
Site-Built	\$21.82	376	\$1.52	493
Mobile Home	\$37.27	22	\$2.38	41
Multi-family	\$23.21	21	\$2.01	35
Black Hills Corp				
Overall	\$27.32	130	-	
Site-Built	\$27.91	114	-	
Mobile Home	\$32.18	2	-	
Multi-family	\$23.88	14	-	
MidAmerican				
Overall	\$21.15	371	\$1.15	387
Site-Built	\$20.78	329	\$1.12	354
Mobile Home	\$29.20	35	\$1.92	25
Multi-family	\$22.95	7	\$0.82	8

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Table 1.14 provides the percentages of total expenditures for measures that were funded by the utilities. The utilities funded the majority of insulation, heating system and water heater replacements, water heater efficiency measures, lighting and refrigerator replacements, programmable thermostats, and water heater ventilation.

Table 1.14 Utility Funding Percentages by Measure

			Utility
Measure	Total	Utility	Percentage
Wall Insulation	\$1,534,302	\$982,226	64.0%
Attic Insulation	\$1,509,125	\$949,899	62.9%
Kneewall Insulation	\$166,030	\$101,887	61.4%
Floor/Crawlspace Insulation	\$437,676	\$261,783	59.8%
Bandjoist Insulation	\$150,435	\$85,098	56.6%
Infiltration Reduction	\$1,182,412	\$212,265	18.0%
High Efficiency Htg Sys Repl.	\$2,891,515	\$1,543,056	53.4%
Electric Htg Sy/Ht Pump Repl.	\$102,216	\$27,947	27.3%
Pipe Wrap	\$18,774	\$10,579	56.4%
Faucet Aerator	\$2,480	\$1,546	62.4%
Shower Head	\$1,969	\$1,210	61.5%
Water Heater Replacement - Hi Eff	\$1,579,574	\$849,809	53.8%
Compact Fluorescent Lighting	\$58,937	\$37,325	63.3%
Exchange Refrigerator	\$211,121	\$115,218	54.6%
Exchange Freezer	\$35,343	\$14,942	42.3%
Repairs	\$930,041	\$123,880	13.3%
Programmable Thermostat	\$5,185	\$5,085	98.1%
Htg Sys Tune/Clean	\$82,412	\$18,108	22.0%
Htg Sys Ventilation	\$179,614	\$79,966	44.5%
Water Heater Ventilation	\$102,276	\$54,473	53.3%
Other	\$3,420,103	\$55,470	1.6%
Overall Excluding Support	\$14,601,538	\$5,531,773	37.9%
Support	\$5,302,237	\$602,760	11.4%
Overall Including Support	\$19,903,775	\$6,134,533	30.8%

Section 3 of this report, Detailed Spending and Impact Profiles by Funding Entity provides detailed result tables for the overall program, state funding, and for each of the three funding utilities. These tables include counts of installations and totals and average energy savings, demand impacts, and program expenditures by measure

EXPENDITURES AND SAVINGS BY AGENCY AND MEASURE

Figure 1.12 shows the average annual energy cost savings by agency. The series are arranged from left to right in the chart according to left to right and top to bottom and in the legend, e.g., Bldg Shell Cooling, then Bldg Shell Heating, then Heating system, etc.

Savings attained by each agency were adjusted according to results of the natural gas and electricity fuel consumption analyses, detailed in Section 2 of this report. The estimated impacts for propane and fuel oil were adjusted using the same factors as those used for natural gas.

Bear in mind that various factors affect the values shown in this chart, factors beyond quality or intensity of weatherization treatment (an example is climate variations within the state). Consequently, these results should not be used as a basis for comparing the quality, attention to detail, dedication, or other factors of agency performance.

The wide variation in results across agencies is typical of what we've observed in past years.

The statewide average client bill savings was \$262 per dwelling. The average first-year client bill savings widely varied across agencies, from a low of \$142 per dwelling for NE lowa to a high of \$360 for CAA Siouxland and \$358 for Southeast Iowa.

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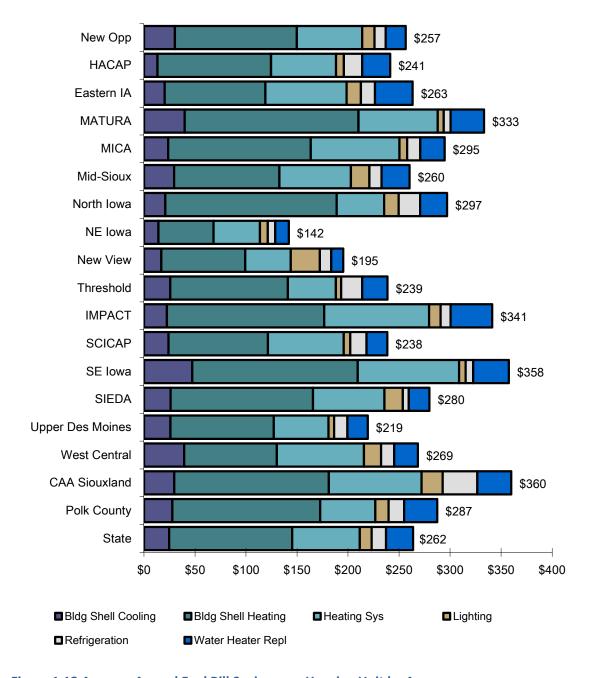


Figure 1.12 Average Annual Fuel Bill Savings per Housing Unit by Agency

Figure 1.13 shows the average expenditures for all households with impacts, ranging from a low of \$6,910 for Northeast Iowa to \$17,370 for IMPACT. The statewide average expenditure was \$13,512 per dwelling unit.

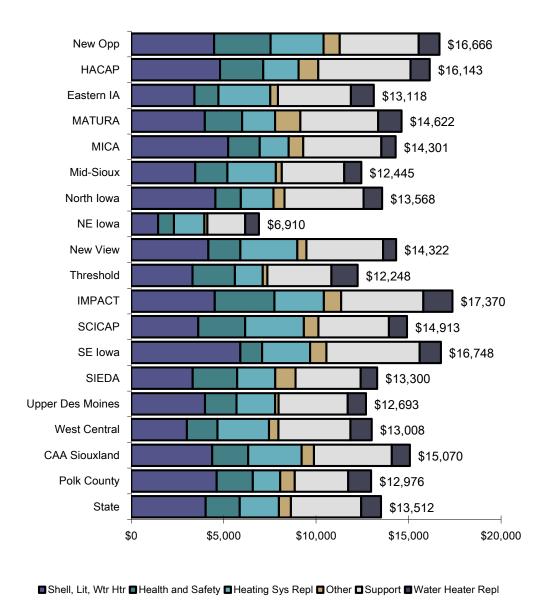


Figure 1.13 Average Expenditures per Housing Unit by Agency

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The average installation rates, costs, and savings for energy efficiency and heating and water heating system replacement measures for calendar year programs 2014-2016 are shown in Figures 1.14a and 1.14b.

The installation rates of nearly all insulation measures and infiltration reduction in the 2015 program have decreased slightly from the prior year (see Figure 1.14a, left chart).

Condensing heating system replacement rates have increased for the past three years, and were at 66% in 2016.

The installation rates of water heater efficiency measures decreased with the exception of pipe insulation. The rates of high-efficiency water heater replacements increased to 69% from 65% in 2015.

Refrigerator and freezer replacement rates increased by a small percentage, to 19% and 5% respectively.

Figure 1.14a, right chart, shows that the average measure costs. Insulation costs increased 6% from the prior year. Condensing heating system costs decreased by 1%. Costs for non-condensing heating systems, installed where condensing units cannot be installed or where boilers are used, increased by 19%. The cost of high efficiency water heater replacements was essentially unchanged (no standard efficiency water heaters were installed in 2016).

The average first-year energy gas and electricity savings for each major measure is shown in Figures 1.14b.

The average natural gas savings by measure declined over the past three years for wall insulation and ceiling/attic insulation. Floor/crawlspace savings increased slightly.

Gas savings for condensing heating system decreased slightly to 118 therms in 2016, from 127 in 2015. Savings for non-condensing heating systems increased slightly.

The average electricity savings from insulation increased: wall insulation savings increased by 30% and ceiling/attic insulation increased by 40% from 2015. These differences are driven in part by year-to-year variation in housing stock for the few housing units that use electric main heat.

Savings from refrigerator replacements was lower, at 508 kWh in 2016, and higher for freezer replacements (542 kWh in 2016).

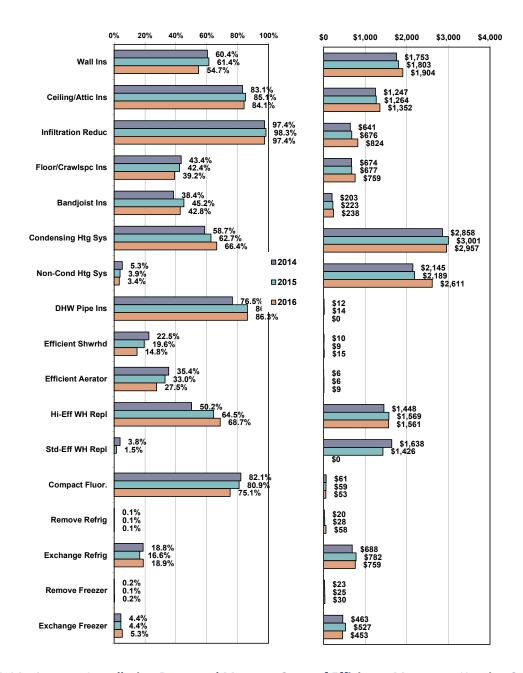


Figure 1.14a Average Installation Rates and Measure Costs of Efficiency Measures, Heating System and Water Heating Replacements

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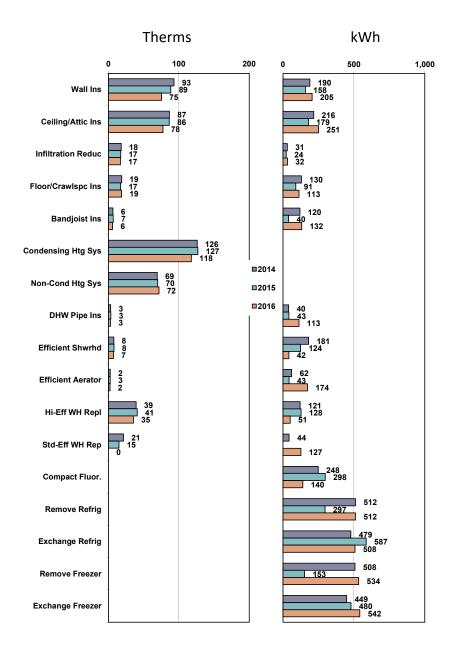


Figure 1.14b Average Gas and Electricity Savings of Efficiency Measures, Heating System and Water Heating Replacements

Tables 1.15 and 1.16 provide tabular data corresponding to data shown in Figure 1.14a and but over a five year period. Table 1.15 provides a listing of the percentage of households receiving measures. Small percentage changes from the previous year are to be expected, and typically correct for lower or higher installation rates of the prior year. The year over year (recent year) change tends to be greatest for measures with very low installation rates and/or savings which are not indicative of major changes in the installation protocols for these measures or program impacts

Table 1.15 Installation Rates of Measures

		ì				Recent Year
Measure	2012	2013	2014	2015	2016	Change (%)
Insulation and Infiltration Reduction	n Measures	; ;				
Wall Insulation	62.9	59.8	60.4	61.4	55.1	-8.9%
Ceiling/Attic Insulation	84.0	82.0	83.1	85.1	84.7	1.9%
Floor/Crawlspace Insulation	43.3	42.8	43.5	42.4	39.4	-9.2%
Bandjoist Insulation	48.9	38.4	39.6	45.2	43.1	9.0%
Infiltration Reduction	98.4	97.5	97.4	98.3	98.1	0.7%
Heating System Measures						
Htg. Sys. Replacement	60.5	58.4	64.0	66.6	70.3	9.8%
High Eff Htg Sys Repl	54.2	50.6	58.7	62.7	66.8	13.9%
Std/Unspec Eff Htg Sys Repl	6.3	7.8	5.3	3.9	3.4	-35.3%
Htg. Sys. Tune and Clean	40.0	39.5	32.9	27.5	26.3	-20.0%
Heating System Safety Check	21.3	15.0	13.1	15.2	9.3	-29.0%
Heating System Ventilation	9.5	33.3	24.4	43.4	52.9	117.1%
Water Heater Measures			÷,	•	i	
Pipe Wrap	75.7	75.0	76.6	86.3	86.9	13.4%
Shower Head	22.5	21.7	22.5	19.6	14.9	-33.8%
Faucet Aerator	35.2	33.0	35.4	33.0	27.7	-21.8%
Water Heater Replacement	45.4	48.2	54.1	65.9	69.2	27.9%
Hi-Eff Wtr Htr Repl.	27.1	38.9	50.2	64.5	69.2	37.7%
Std-Eff Wtr Htr Repl.	18.3	9.4	3.8	1.5	-	-
Water Heater Ventilation	22.4	20.3	29.8	31.5	39.8	33.6%
Water Heater Repair	11.0	9.7	7.7	5.4	6.5	-16.1%
Lighting Measures						
Compact Fluorescent Bulbs	84.9	86.1	82.9	81.6	75.6	-8.8%
Refrigeration Measures	24.7	24.8	22.0	19.7	22.4	1.8%
Refrigerator Removal	0.1	0.3	0.1	0.1	0.1	127.8%
Refrigerator Exchange	21.1	21.4	18.8	16.6	19.0	0.8%
Freezer Removal	0.1	0.1	0.2	0.1	0.2	13.9%
Freezer Exchange	5.5	4.7	4.4	4.4	5.3	20.0%
Health and Safety (other than heat	ing & wate	r heating i	measures l	isted abov	e)	
CO Detector	77.3	81.1	84.4	85.2	90.9	7.7%
Smoke Detector	48.8	59.9	59.8	61.2	65.3	9.2%
Exhaust Ventilation	83.5	80.4	82.4	84.5	89.3	8.4%
Fuses	0.6	0.1	0.5	0.9	0.7	42.3%
Repairs	87.6	88.4	87.3	88.1	87.9	0.7%

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Table 1.16 shows details of the average installed costs for each measure over the past 5 years. As with the installation rates, the greatest changes tend to occur for measures with few installations and/or small costs.

Table 1.16 Average Measure Costs

Measure	2012	2013	2014	2015	2016	Recent Year Change (%)
Insulation and Infiltration Reduction	n Measures					
Wall Insulation	1,587	1,466	1,753	1,803	1,904	8.6%
Ceiling/Attic Insulation	1,096	1,124	1,247	1,264	1,352	8.4%
Infiltration Reduction	505	556	641	676	824	28.5%
Floor/Crawlspace Insulation	725	683	674	677	759	12.5%
Bandjoist Insulation	157	164	203	223	238	17.7%
Heating System Measures						
Htg. Sys. Replacement						
Condensing Htg Sys Repl	2,460	2,388	2,858	3,001	2,957	3.4%
Non-Cond Htg Sys Repl	2,077	2,766	2,145	2,189	2,611	21.7%
Htg. Sys. Tune and Clean	147	155	219	186	214	-2.3%
Heating System Safety Check	119	135	138	145	149	8.4%
Heating System Ventilation	131	238	236	236	232	-1.8%
Water Heater Measures						
Pipe Wrap	5	5	12	14	15	18.7%
Shower Head	9	9	10	9	9	-5.3%
Faucet Aerator	4	4	6	6	6	10.6%
Water Heater Replacement						
Hi-Eff Wtr Htr Repl.	1,197	1,175	1,448	1,569	1,561	7.8%
Std-Eff Wtr Htr Repl.	1,037	1,097	1,638	1,426	-	-
Water Heater Ventilation	226	213	237	188	175	-26.1%
Water Heater Repair	97	102	115	122	130	12.4%
Lighting Measures						
CFL Bulbs (avg spent per home)	62	60	63	59	53	-14.8%
Refrigeration Measures						
Refrigerator Removal	25	18	20	28	58	187.5%
Refrigerator Exchange	730	698	688	782	759	10.4%
Freezer Removal	39	25	23	25	30	28.6%
Freezer Exchange	532	498	463	527	453	-2.1%
Health and Safety (other than heat	ing & water	heating n	neasures li	sted abo	ve)	
CO Detector	52	49	57	62	66	14.6%
Smoke Detector	45	47	52	59	54	4.0%
Exhaust Ventilation	452	659	734	830	881	20.0%
Fuses	108	22	103	82	128	24.4%
Repairs	573	636	668	589	723	8.2%
Support	2,424	2,631	3,106	3,452	3,755	20.9%

 $Note: Kneewall \ insulation \ was \ reported \ with \ wall \ insulation \ prior \ to \ 2007, it \ is \ now \ bundled \ with \ Ceiling./Attic \ Insulation \ prior \ to \ 2007, it \ is \ now \ bundled \ with \ Ceiling.$

SAVINGS OF WATER HEATER, LIGHTING, AND REFRIGERATION MEASURES

Table 1.17 shows the installation rates for energy efficiency measures other than space heating or cooling. These measures include water heater efficiency measures, lighting, and refrigeration measures. Statewide, client bill savings averaged \$31 for these measures. The highest average bill savings were attained by North Iowa and New View, averaging over \$40 per unit. Matura, Northeast Iowa and Southeast Iowa averaged less than \$20 per dwelling.

Table 1.17 Installation Rates and Savings of Baseload Measures

	Water Heating		Lighting	Refrigeration					
		Eff	Eff		Ex-	Ex-			Average
	Pipe	Shower-	Faucet	Compact	change	change	Remove	Remove	First Year
Agency	Wrap	head	Aerator	Fluor	Refrig	Freezer	Refrig	Freezer	Bill
New Opp	37%	0%	0%	92%	12%	6%	2%	0%	\$24.67
HACAP	90%	0%	0%	76%	18%	13%	0%	0%	\$28.74
Eastern IA	89%	19%	43%	84%	19%	4%	0%	0%	\$34.70
Matura	72%	12%	20%	68%	12%	0%	0%	0%	\$18.54
MICA	54%	5%	14%	55%	19%	4%	0%	0%	\$23.35
Mid-Sioux	95%	30%	14%	86%	14%	7%	0%	0%	\$38.86
North Iowa	99%	46%	79%	90%	27%	9%	0%	1%	\$43.96
NE Iowa	89%	0%	0%	61%	10%	2%	0%	1%	\$17.79
New View	89%	0%	0%	98%	17%	2%	0%	0%	\$41.55
Threshold	96%	18%	13%	62%	27%	9%	0%	1%	\$29.72
Redrock	97%	0%	0%	91%	14%	3%	0%	0%	\$25.01
SCICAP	66%	41%	34%	48%	14%	10%	3%	0%	\$31.12
SE Iowa	87%	0%	0%	53%	8%	3%	0%	0%	\$16.69
SIEDA	87%	3%	23%	56%	8%	2%	0%	0%	\$29.36
Upper Des Moines	100%	0%	0%	85%	21%	3%	0%	0%	\$21.67
West Central	81%	25%	75%	75%	16%	5%	0%	0%	\$36.71
CAA Siouxland	93%	78%	13%	96%	53%	4%	0%	0%	\$67.84
Polk County	91%	22%	74%	79%	22%	3%	0%	0%	\$33.56
State	86%	15%	28%	75%	19%	5%	0%	0%	\$30.81

^{*} First-year household bill savings are averages of total water heater, and lighting for units receiving the measures

TRENDS IN THE INSTALLATION RATES OF LIGHTING, REFRIGERATION, AND HEATING SYSTEM REPLACEMENTS

This section focuses on trends in the installation rates of several efficiency measures phased into the joint utility/WAP program, including compact fluorescent lighting, heating system replacements, and refrigeration measures. These are shown in Figures 1.18a through 1.18d.

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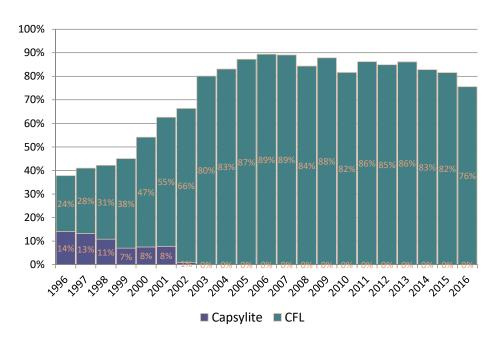


Figure 1.18a Percentage of Housing Units Receiving Lighting Measures

Figure 1.18a shows the percentage of dwellings receiving at least one lighting measure for each year, beginning in 1996. Lighting was installed in 38% of dwellings in 1996 and peaked in 2006 and 2007 at 89%. The installation rates for lighting have decreased over the past four years as more units already have efficient lighting installed. In 2016, 76% of dwellings receive lighting from the program.

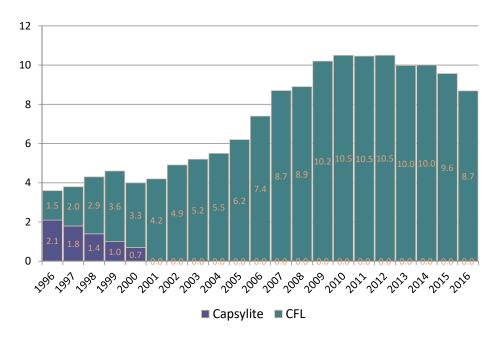


Figure 1.18b Average Number of Bulbs Installed for Housing Units Receiving Lighting Measures

The average number of bulbs installed in dwellings that received at least one lighting measure averaged 8.7 bulbs per house 2015. The peak was in 2010-2013 at 10.5 bulbs per dwelling (Figure 1.18b).

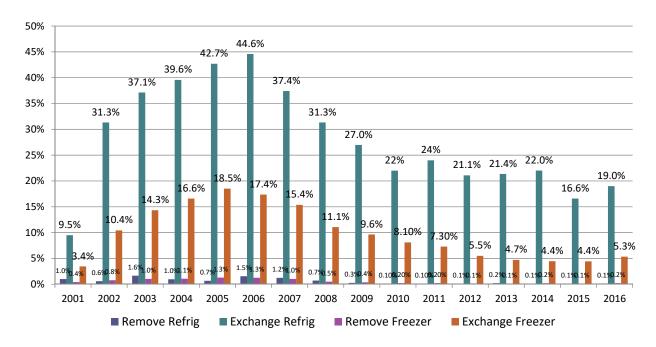


Figure 1.18c Installation Rates of Refrigeration Measures

Figure 1.18c shows the initial ramp up of refrigeration measure installation rates as well as declines in recent years as the efficiency of in-place units is increasing in the client population. The replacement rates of refrigerators remains lower than levels prior to 2015 appliances, but did increase to 19% in 2016. Freezer replacements also increased modestly, to 5.3% in 2016.

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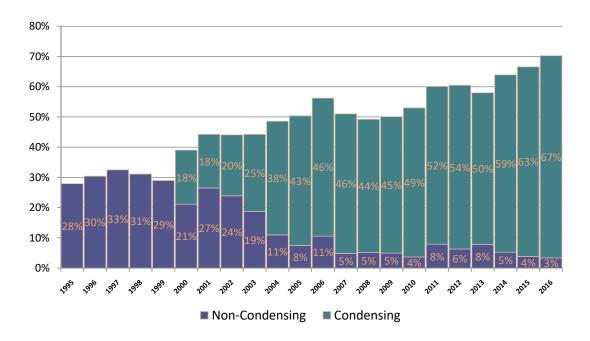


Figure 1.18d Installation Rates of Natural Gas Heating System Replacements

Figure 1.13d shows the transition to condensing (90+ efficiency) furnaces from non-condensing (80% efficiency) heating systems. Overall, 70% of dwellings with natural gas heating received a heating system replacement during 2016, with the vast majority of these being condensing units (67%). This is the highest overall replacement rate and the highest installation rate of condensing units of any year of the program.

AVERAGE COSTS OF MAJOR MEASURES BY AGENCY

Figures 1.19-1.23 show the agency-specific average costs for ceiling, wall, and floor/crawlspace insulation and furnace replacements for the overall program and for utility-funded measures only. These costs represent the total expenditures for these measures averaged over the number of households that received the measure (as opposed to an average across all households that were treated by the agency).

CEILING AND ATTIC INSULATION EXPENDITURES

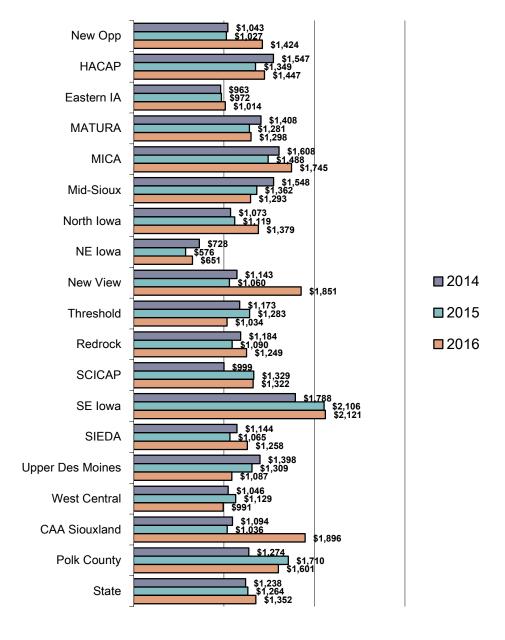


Figure 1.19a Average Program Expenditures on Ceiling Insulation by Agency

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Figures 1.19a shows the average installed costs for ceiling and attic insulation (including cavity-fill blown attic insulation) for all expenditures. The statewide average cost for ceiling insulation was \$1,206 in 2016.

SE lowa averaged \$2,121 per unit. CAA Siouxland (\$1,896) and New View (\$1,851) were the next highest in expenditures. The lowest average spending was reported by Northeast Iowa, averaging \$651.

Figure 1.19b shows the statewide average expenditure of utility funds on ceiling and attic insulation was \$1,206. Southeast lowa spent the most at \$1,888, followed by Polk County (\$1,546). Northeast lowa spent the least utility funds (\$591) for ceiling and attic insulation.

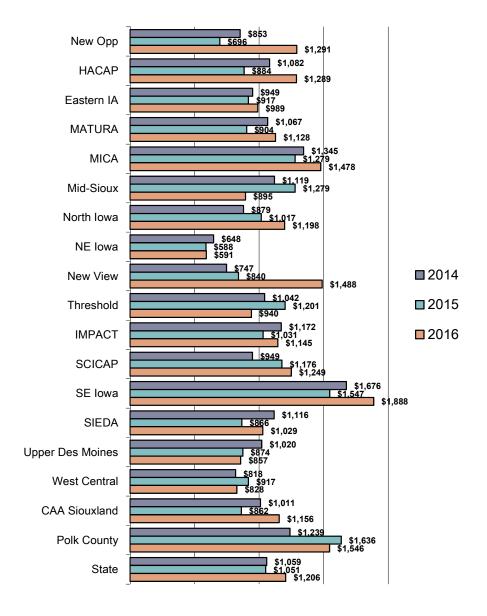


Figure 1.19b Average Utility Expenditures on Ceiling Insulation by Agency

WALL INSULATION EXPENDITURES

Figures 1.20a shows the average installed costs for wall insulation for all funding. The state average expenditure for wall insulation was \$1,904 in CY 2016. HACAP, SE Iowa, and North Iowa each averaged more than \$2,500. Northeast Iowa spent the least, averaging \$568 per dwelling unit.

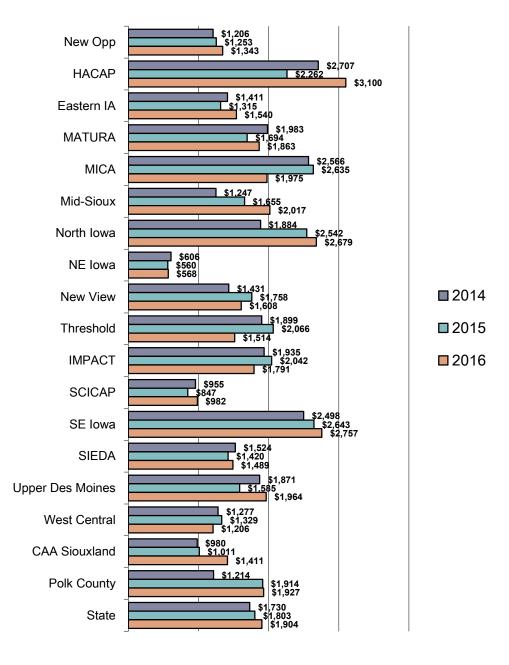


Figure 1.20a Average Program Expenditures on Wall Insulation by Agency

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Figure 1.20b provides agency expenditures for utility-funded wall insulation. Statewide, the average expenditures for utility-funded wall insulation averaged \$1,717 in CY 2016. Southeast Iowa, HACAP, and Polk County spent the most utility funds, averaging over \$2,000; Northeast Iowa spent the least, averaging \$631 per dwelling.

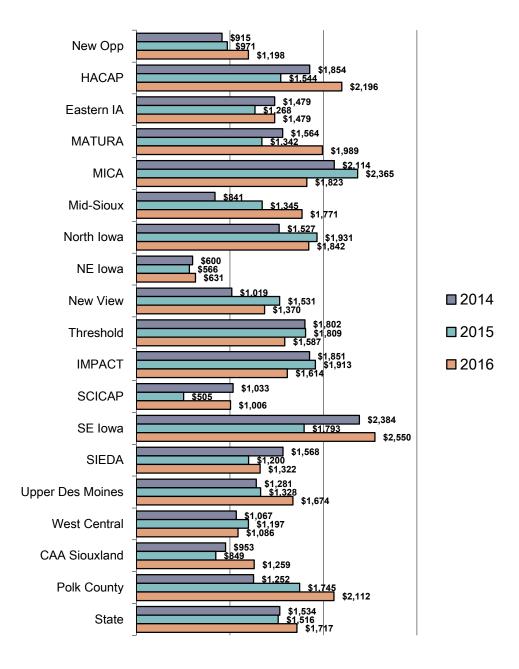


Figure 1.20b Average Utility Expenditures on Wall Insulation by Agency

FLOOR/CRAWLSPACE INSULATION

Figures 1.21a shows the average expenditures for floor/crawlspace insulation from all funding sources. Statewide, the cost for floor/crawlspace insulation averaged \$759. CAA Siouxland, HACAP, New View, and IMPACT spent the most, averaging over \$1,000 per unit, while SIEDA, Threshold, West Central, and North Iowa spent less than \$400.

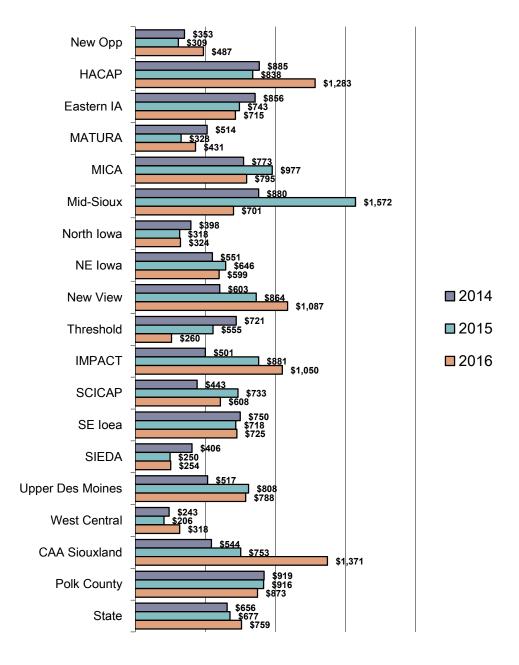


Figure 1.21a Average Program Expenditures on Floor/Crawlspace Insulation by Agency

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The average expenditure of utility funds for floor/crawlspace insulation(Figure 1.22b) was \$696. HACAP and IMPACT spent over \$1,000 while SIEDA, Threshold, and West Central spent less than \$300.

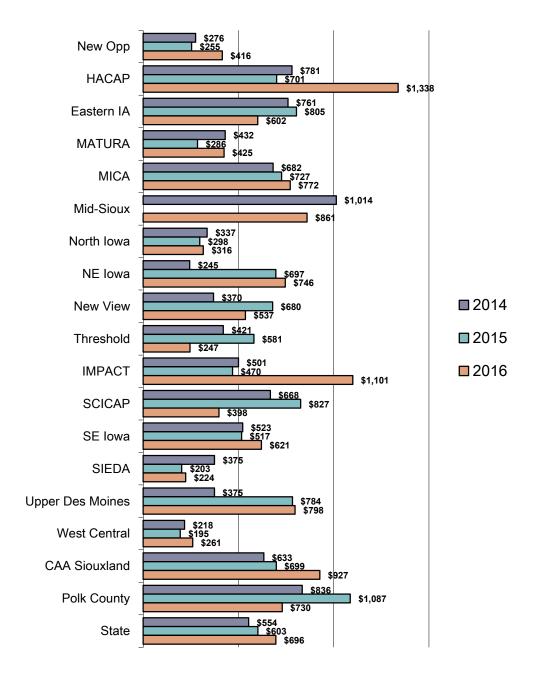


Figure 1.22b Average Utility Expenditures on Floor/Crawlspace Insulation by Agency

NON-ELECTRIC HEATING SYSTEM REPLACEMENT EXPENDITURES

Figures 1.23a shows the average expenditures for all non-electric heating system replacements from all funding sources. Statewide average heating system replacement costs were \$2,981 in 2016. Three agencies reported average expenditures exceeding \$4,000, including New View (\$4,887), SCICAP (\$4,847), and New Opportunities (\$4,020). Three agencies averaged less than \$2,500, including MICA (\$2,057), Threshold (\$2,146), and Polk County (\$2,241).

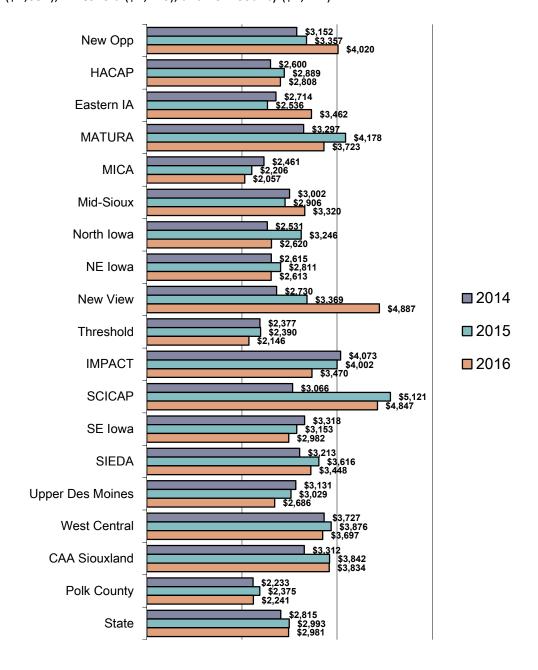


Figure 1.23a Average Program Expenditures on Heating System Replacements by Agency

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Figure 1.23b shows the average utility funding for replacement heating systems of \$2,498 statewide. SCICAP averaged the highest expenditure at \$3,125, followed by MATURA (\$3,032) and CAA Siouxland (\$2,995) and Eastern Iowa (\$2,948). MICA spent the least, averaging \$1,924 per housing unit.

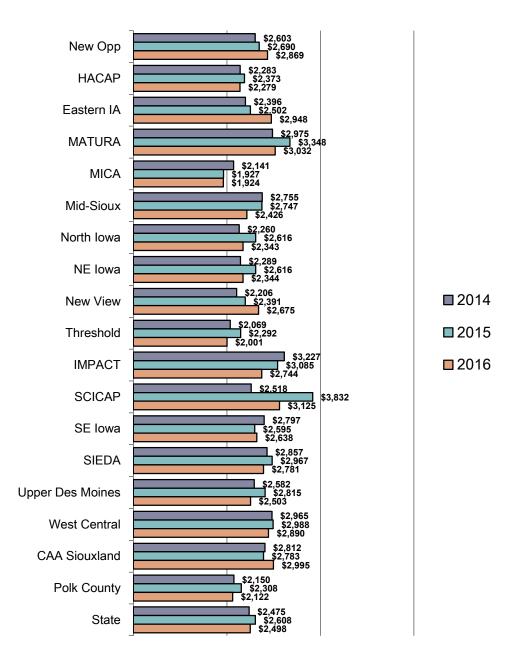


Figure 1.23b Average Utility Expenditures on Heating System Replacements by Agency

Section 4, Detailed Spending and Impact Profiles by Agency provides tables similar to those in Section 4 for each weatherization agency, for all measures installed.

Section 5, Detailed Spending and Impact Profiles by Agency for Utility Expenditures provides similar detail by agency, but is limited to measures funded by the utilities.

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2. FUEL CONSUMPTION ANALYSIS

Savings were estimated for all clients based upon measures installed in each dwelling, using algorithms developed in prior studies of the lowa low-income program. The fuel consumption analysis provides adjustment factors to the estimated impacts, with gas adjustments applied to estimates of natural gas, propane, and fuel oil heating impacts.

STUDY SAMPLE AND METHODOLOGY

Weatherization jobs completed from January 1, 2016 through December 31, 2016 comprised our treatment group gas treatment group. Jobs weatherized from October 1, 2015 through May 1, 2016 comprised the electricity treatment group.

We used a comparison group to adjust for non-weatherization program factors that affect fuel usage, including but not limited to fuel price shocks, naturally-occurring conservation, and participation in other energy programs. Our comparison group consisted of all LIHEAP clients of the SLICE utilities and who applied for energy assistance from October, 2015 through March, 2017. In order to assess a change in consumption for the comparison group, we established a pseudo-treatment period for each comparison group household by assigning the same period as that of a randomly selected household from the treatment group.

Estimated usage readings were combined with subsequent actual readings. Phone/postcard readings and final or corrected readings were considered actual readings. Reading codes not corresponding to actual readings were considered estimated.

The weatherization period was defined as beginning with the audit date and ending with the date the dwelling was reported as complete. We truncated the usage data to a period of no more than to 390 days prior to the beginning of the weatherization period, and up to 390 days following end of the weatherization period.

Fuel consumption was weather-normalized using weather data from the same ten weather zones (Figure 2.1). Our long-term normal weather datasets are comprised of the 20-year period ending in Dec, 2009.

The comparison group records were matched with treatment group records based upon normalized annual pre-weatherization consumption, housing type, heating fuel, and model components (heating and or/ cooling and/or baseload).

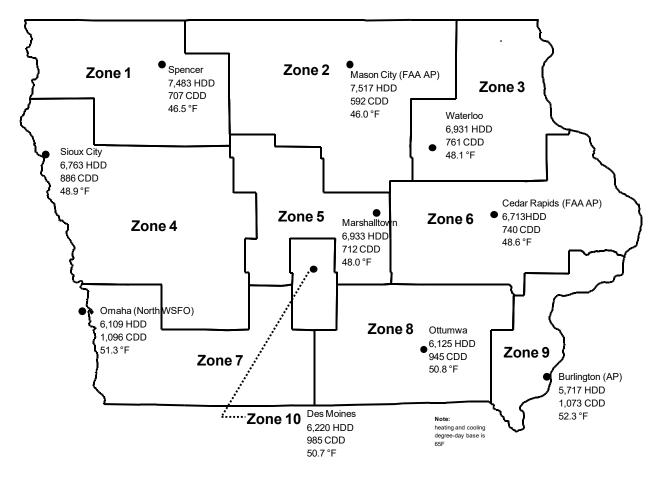


Figure 2.1. Weather zones used in the weather-normalization

MODEL SELECTION

We investigated impacts using five model specifications for each dwelling:

- Heating/Baseload (gas and electricity)
 - o HB using floating point reference temperatures ranging between 40°F to 70°F
 - o HBF using fixed reference temperatures of 62°F for natural gas and 58°F for electricity
- Cooling/Baseload (electricity only)
 - o CB using floating point reference temperatures ranging between 60°F to 80°F
 - CBF using fixed reference temperatures of 68°F
- Heating only (gas only)
 - o HO using floating point reference temperatures ranging between 40°F and 70°F
 - HOF using fixed reference temperatures of 62°F

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- Heating/Cooling/Baseload (electricity only)
 - Heating floating point reference temperatures ranging between 40°F and 70°F
 - Cooling floating point reference temperatures ranging between 60°F and 80°F
 - HCF using fixed reference temperatures of 58°F for heating and 68°F for cooling
- BO Baseload (electricity and gas, but no gas models passed the selection process)
 - o flat usage, requiring nine months of data.

Three levels of screens were used, including:

- 1) Insufficient usage history or usage characteristics
- 2) Poor model diagnostics
- 3) Poor model reliability.

SCREENS FOR POOR MODEL DIAGNOSTICS

Models were dropped if:

- the coefficient of variation of NAC exceeded 0.1
- negative values for adjusted r²
- Gas: R² of at least 0.7, electricity: R² of at least 0.5

SCREENS FOR POOR MODEL RELIABILITY

Models were dropped if:

- the normalized annual heating consumption, heating slope, or baseload components were negative
- Minimal requirements for specific model types:
 - Heating models require usage during periods representing at least 50% of the annual heating days
 - o Baseload models required 8.5 months of consumption
- Usage histories had insufficient data during heating and/or cooling seasons. Histories must have usage during periods of at least 50% of heating degree days (base 62 for gas, 58 for electricity heating models), and 50% of cooling degree days base 68 (electricity only)

Finally, we required that the normalized annual consumption was within 10% of the results for alternate model specifications where multiple models met other criteria.

ATTRITION ANALYSIS - GAS

We requested data for 1,215 weatherization client dwellings with gas heating and 70,196 LIHEAP client dwellings for our comparison group (also with gas heating). This request included dwellings weatherized during 2016 and dwellings weatherized during 2016.

ATTRITION RATES

Table 2.1 provides a breakout of the attrition rates of the natural gas billing data request, by state and utility.

The utilities returned useable data for 86% of the treatment client dwellings and 77% for the comparison group (LIHEAP) clients. Useable histories with sufficient pre- and post-weatherization data were available for 74% of the treatment group clients and 62% of the comparison group. Our final analytic dataset included 811 weatherization client dwellings and 37,734 comparison dwellings, representing 67% and 54% of the requested usage histories for the treatment and comparison groups, respectively.

Table 2.1 Gas Analysis Sample Attrition

		Stat	:e	IPI	L	вно	:	MA	Æ
		Trt	Cmpr	Trt	Cmpr	Trt	Cmpr	Trt	Cmpr
	Requested	1,215	70,196	429	18,584	174	10,730	612	40,882
Return Rate	Returned	1,049	54,190	379	15,944	160	9,915	510	28,331
	Percentage Returned	86.3%	77.2%	88.3%	85.8%	92.0%	92.4%	83.3%	69.3%
Useable Histories	Both Pre and Pst Cnt	898	43,699	302	10,672	140	8,258	456	24,769
Oseable Histories	Both Pre and Pst Pct	73.9%	62.3%	70.4%	57.4%	80.5%	77.0%	74.5%	60.6%
Passed Model	Both Pre and Pst Cnt	829	39,004	270	9,366	123	7,116	436	22,522
Diagnostics	Both Pre and Pst Pct	68.2%	55.6%	62.9%	50.4%	70.7%	66.3%	71.2%	55.1%
Passed Reliability	Both Pre and Pst Cnt	811	37,734	261	9,101	122	6,913	428	21,720
Screens	Both Pre and Pst Pct	66.7%	53.8%	60.8%	49.0%	70.1%	64.4%	69.9%	53.1%

Table 2.2 provides the attrition analysis broken out by housing type. Overall, 67% of the requested account data for single family site-built dwellings, 69% of mobile homes, and 51% of the few multifamily dwellings weatherized by the program passed all analytic screens.

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Table 2.2 Gas Attrition by Housing Type

		Stat	te	IP	L	вно	:	MA	E
		Trt	Cmpr	Trt	Cmpr	Trt	Cmpr	Trt	Cmpr
Single Family Deta	ched Framed Dwellings								
Requested		1,068	55,380	380	15,218	155	8,829	533	31,333
Returned		933	44,579	344	13,407	145	8,189	444	22,983
Percentage Return	ed	87.4%	80.5%	90.5%	88.1%	93.5%	92.8%	83.3%	73.4%
Passed Model	Both Pre and Pst Cnt	734	33,000	243	8,139	112	6,032	379	18,829
Diagnostics	Both Pre and Pst Pct	68.7%	59.6%	63.9%	53.5%	72.3%	68.3%	71.1%	60.1%
Passed Reliability	Both Pre and Pst Cnt	718	31,955	234	7,914	111	5,855	373	18,186
Screens	Both Pre and Pst Pct	67.2%	57.7%	61.6%	52.0%	71.6%	66.3%	70.0%	58.0%
Mobile Homes									
Requested		98	3,596	26	1,113	5	494	67	1,989
Returned		86	2,858	24	970	4	445	58	1,443
Percentage Return	ed	87.8%	79.5%	92.3%	87.2%	80.0%	90.1%	86.6%	72.5%
Passed Model	Both Pre and Pst Cnt	70	1,989	18	546	3	297	49	1,146
Diagnostics	Both Pre and Pst Pct	71.4%	55.3%	69.2%	49.1%	60.0%	60.1%	73.1%	57.6%
Passed Reliability	Both Pre and Pst Cnt	68	1,935	18	531	3	292	47	1,112
Screens	Both Pre and Pst Pct	69.4%	53.8%	69.2%	47.7%	60.0%	59.1%	70.1%	55.9%
Multi-Family									
Requested		49	11,220	23	2,253	14	1,407	12	7,560
Returned		30	6,753	11	1,567	11	1,281	8	3,905
Percentage Return	ed	61.2%	60.2%	47.8%	69.6%	78.6%	91.0%	66.7%	51.7%
Passed Model	Both Pre and Pst Cnt	25	4,015	9	681	8	787	8	2,547
Diagnostics	Both Pre and Pst Pct	51.0%	35.8%	39.1%	30.2%	57.1%	55.9%	66.7%	33.7%
Passed Reliability	Both Pre and Pst Cnt	25	3,844	9	656	8	766	8	2,422
Screens	Both Pre and Pst Pct	51.0%	34.3%	39.1%	29.1%	57.1%	54.4%	66.7%	32.0%

OUTLIERS

An outlier screen was then applied to models with reliable pre- and post-usage data using the Interquartile Rule for Outliers (Tukey Fence). Cases where the percentage savings were greater or less than 1.5 times the interquartile range were dropped.

The outlier screen dropped approximately 2% of treatment group observations and 13% of comparison group cases with pre and post savings models.

GAS IMPACT ANALYSIS

Our results are summarized in Table 2.3. The agency-specific results are summarized on each line, with the overall program impacts summarized on the bottom line. The column labeled 'Population' provides the count of all dwellings with natural gas heating that were treated by the weatherization program during the calendar year. The treatment group columns indicate the number of dwellings in our screened analysis dataset ('n'), the weather-normalized annual consumption prior to weatherization ('Baseline' consumption), the 90% confidence interval on the baseline consumption (interpreted as the variation from baseline for which we are 90% certain that the true mean value of the baseline consumption falls within), the unadjusted savings ('Savings') and the 90% confidence interval on the savings.

The next section of Table 3.2 provides results for the matched comparison group. To the right if those results are the net savings by agency, including average savings and percentage savings.

The rightmost section summarizes the average estimated savings which were developed using dwelling-specific measure data as well as a comparison between the estimated and observed savings, termed the realization rate. The realization rate is defined as the ratio of observed savings to estimated savings. Our final agency-specific results are developed by applying this ratio to the estimated savings for all dwellings with non-electric heating.

The overall adjusted savings (reported under the Net Savings column) averaged 251 therms for single family site-built dwellings. The 90% confidence interval was 15 therms, which is suggestive that 90% certain that the true population mean savings falls in the approximate range of 236 and 266 therms. The overall mean percent savings was 25.1%, with a 1.3% confidence interval.

Net gas savings for mobile homes averaged 162 therms ±31 therms. The overall percentage savings for mobile homes was 20.1%, with a 3.6% confidence interval. The average savings of 162 therms for mobile homes are significantly lower than the 251 therms observed for single family site-built dwellings.

We did not have enough data to provide reliable results for the few multi-family dwellings weatherized.

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Table 2.3 Gas Fuel Consumption Analysis Results

	Population		Treatmen	t Group				Comparis	on Grou	ıp								
	(with gas heating source)	n	Baseline Cons. (therms)	90% CI	Savings (therms)	90% CI	n	Baseline Cons. (therms)	90% CI	Savings (therms)	90% CI	Net Savings (therms)	90% CI	Percent Savings (%)	90% CI	Estimated Savings	90% CI	Realization Rate (%)
Single Family Detache	ed Framed Dwe	elling Re	esults															
New Opportunities	37	17	1,223	115	232	103	135	1,211	107	0	48	233	111	19.0%	10.4%	284	53	81.9%
HACAP	95	56	1,053	81	291	60	533	1,054	78	-7	21	298	58	28.3%	4.9%	293	26	101.6%
Eastern IA	129	104	971	54	274	35	598	969	54	-1	17	275	38	28.3%	3.2%	255	22	108.0%
MATURA	21	10	1,125	241	336	112	70	1,111	221	31	57	304	78	27.0%	6.7%	200	58	151.8%
MICA	66	43	1,069	92	260	49	327	1,069	91	-20	27	279	63	26.1%	4.6%	282	28	98.8%
Mid-Sioux	28	9	933	97	188	53	134	937	84	-10	34	198	63	21.2%	7.4%	255	62	77.6%
North Iowa	75	46	1,048	77	242	54	370	1,043	76	24	20	218	51	20.8%	4.6%	363	31	60.1%
NE Iowa	70	44	878	86	86	51	325	872	82	-31	20	117	55	13.3%	5.3%	192	30	61.0%
New View	20	11	997	138	132	103	235	996	137	28	39	104	115	10.4%	11.8%	273	66	38.0%
Threshold	81	50	938	56	213	55	434	940	55	10	20	203	52	21.6%	4.7%	286	24	70.9%
IMPACT	27	17	1,187	134	358	65	197	1,179	129	-27	37	384	72	32.4%	5.4%	299	32	128.5%
SCICAP	22	9	787	140	184	89	89	764	123	-49	18	235	86	29.8%	9.1%	268	159	87.6%
SE Iowa	51	19	1,248	64	398	89	131	1,238	65	5	41	393	100	31.5%	6.8%	398	38	98.8%
SIEDA	48	27	790	107	220	56	437	779	102	-40	19	260	62	32.9%	6.0%	208	43	125.0%
Upper Des Moines	99	76	839	57	175	44	466	840	56	-16	12	191	45	22.8%	4.1%	264	24	72.4%
West Central	43	31	809	10 1	182	87	405	806	97	-13	13	195	81	24.1%	8.3%	250	36	77.9%
CAA Siouxland	34	23	1,188	129	327	90	306	1,192	127	18	36	309	99	26.0%	6.5%	279	37	110.6%
Polk County	163	108	1,104	58	308	34	618	1,100	58	11	18	298	35	27.0%	2.8%	339	19	87.7%
Overall	1,109	700	998	21	247	14	5,810	995	21	-4	6	251	15	25.1%	1.3%	283	8	88.5%
Mobile Home Results	(entire state)																	
Overall	100	63	808	47	144	29	437	806	46	-19	11	162	31	20.1%	3.6%	190	25	85.6%

SAVINGS WITH RESPECT TO PRE-WEATHERIZATION USAGE

We plotted the relationship between the normalized annual consumption and the net savings for single family site-built dwellings (Figure 2.2). The upward trending regression line indicates the population-weighted fit between NAC and savings, and demonstrates savings in relation to baseline consumption. The statewide average is shown at the center.

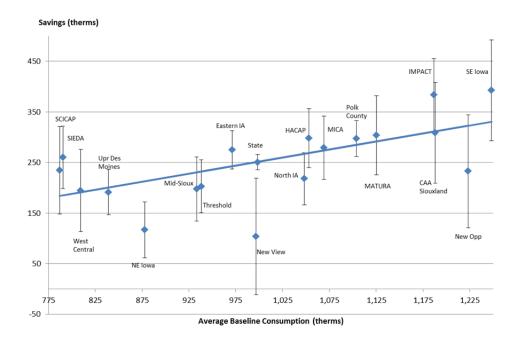


Figure 2.2 Savings in relation to the pre-weatherization normalized annual consumption (single family site-built dwellings).

The 90% confidence intervals of the average adjusted savings for each agency are shown in the error bars. Agencies with confidence intervals overlapping the regression line produced savings consistent with the state overall for dwellings relative to the baseline consumption for those agencies. We found that the confidence intervals on the savings for all but two agencies overlapped the regression line, indicating relatively good or high performance for those fifteen agencies. The two agencies which did not achieve good savings relative to pre-weatherization consumption were NE lowa and New View. This suggests that significant differently different housing stock, weatherization procedures, or other factors resulted in comparatively lower savings for these agencies relative to pre-weatherization consumption.

In addition, agencies in which the confidence intervals range extend into or above the confidence interval for the state overall had similar or higher savings relative to the state. All agencies achieved this except NE Iowa and New View.

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Figure 2.3 provides another view of the savings with respect to baseline consumption. The plot shows a point for the savings for dwellings in our billing dataset, a regression line through all points, and an assessment of the percentage savings as determined by this regression line (shown by the curved line). The chart provides confirmation that absolute savings increase as higher-consumption dwellings are targeted. Percent savings increases significantly as baseline consumption increases at the lower range, and less so at higher ranges as the curve flattens out.

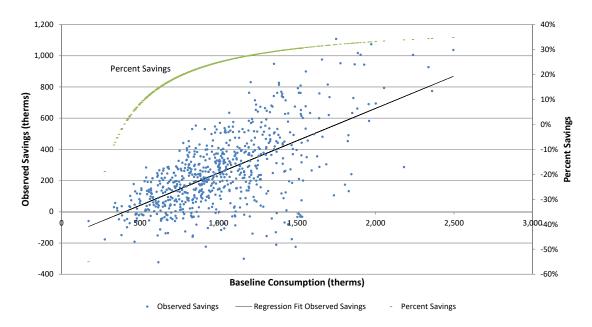


Figure 2.3. Relationship between baseline consumption, savings, and percentage savings

TRENDS IN BASELINE CONSUMPTION AND ENERGY SAVINGS

Figure 2.4 provides a yearly summary of baseline consumption, savings, and percentage savings for billing analyses conducted since the calendar year 1998 program. The treatment group normalized annual consumption approached 1,394 therms per site-built dwelling in the CY 1998 program. Baseline consumption has declined by 28% since then, to 998 in CY 2016. Generally speaking, net savings has declined through 2010 and has been increasing slightly since then. Overall percentage savings has increased through the period, from around 23% to slightly more than 25% in the 2016 program.

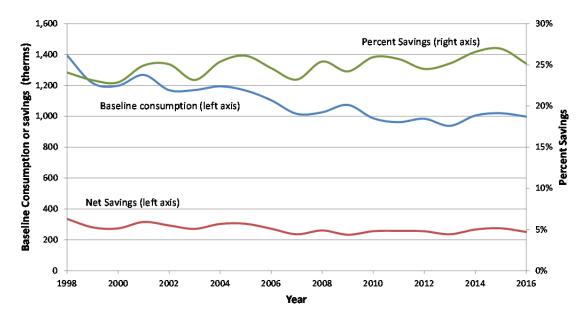


Figure 2.4 Annual Baseline Consumption, Savings, and Percentage Savings

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ATTRITION ANALYSIS - ELECTRICITY

We requested data for 950 weatherization client dwellings and 88,172 LIHEAP client dwellings for our comparison group. The electricity analysis was restricted to home weatherized between Oct 1, 2015 and May 1, 2016 to allow for up to a year of pre and post-weatherization periods.

Overall we had 475 treatment and 39,103 comparison group homes which passed all screens.

Table 2.5 Electricity Analysis Sample Attrition

		Stat	te	IPI	L	MA	ιE
		Trt	Cmpr	Trt	Cmpr	Trt	Cmpr
	Requested	950	88,172	447	42,101	503	46,041
Return Rate	Returned	816	78,029	389	38,482	427	39,532
	Percentage Returned	85.9%	88.5%	87.0%	91.4%	84.9%	85.9%
Useable Histories	Both Pre and Pst Cnt	624	53,113	277	22,961	347	30,144
Oseable Histories	Both Pre and Pst Pct	65.7%	60.2%	62.0%	54.5%	69.0%	65.5%
Passed Model	Both Pre and Pst Cnt	560	45,451	246	20,402	314	25,045
Diagnostics	Both Pre and Pst Pct	58.9%	51.5%	55.0%	48.5%	62.4%	54.4%
Passed Reliability	Both Pre and Pst Cnt	475	39,103	225	18,653	250	20,449
Screens	Both Pre and Pst Pct	50.0%	44.3%	50.3%	44.3%	49.7%	44.4%

Table 2.6 provides the attrition analysis broken out by housing type. Most of the cases with electricity results were for weatherized single family detached frame dwellings, totaling 439 cases. Twenty-six mobile homes and ten multi-family units weatherized by the program passed all screens.

Table 2.6 Electricity Attrition by Housing Type

		Stat	e	IPI	L	MA	E
		Trt	Cmpr	Trt	Cmpr	Trt	Cmpr
Single Family Deta	ached Framed Dwellings						
Requested		838	61,399	385	29,865	453	31,513
Returned		736	55,114	349	27,483	387	27,620
Percentage Return	ed	87.8%	89.8%	90.6%	92.0%	85.4%	87.6%
Passed Model	Both Pre and Pst Cnt	514	33,965	223	15,597	291	18,365
Diagnostics	Both Pre and Pst Pct	61.3%	55.3%	57.9%	52.2%	64.2%	58.3%
Passed Reliability	Both Pre and Pst Cnt	439	29,516	203	14,313	236	15,202
Screens	Both Pre and Pst Pct	52.4%	48.1%	52.7%	47.9%	52.1%	48.2%
Mobile Homes							
Requested		73	3,391	35	1,593	38	1,796
Returned		61	3,015	29	1,462	32	1,552
Percentage Return	ed	83.6%	88.9%	82.9%	91.8%	84.2%	86.4%
Passed Model	Both Pre and Pst Cnt	34	1,758	16	766	18	992
Diagnostics	Both Pre and Pst Pct	46.6%	51.8%	45.7%	48.1%	47.4%	55.2%
Passed Reliability	Both Pre and Pst Cnt	26	1,473	15	686	11	787
Screens	Both Pre and Pst Pct	35.6%	43.4%	42.9%	43.1%	28.9%	43.8%
Multi-Family							
Requested		39	23,382	27	10,643	12	12,732
Returned		19	19,900	11	9,537	8	10,360
Percentage Return	ed	48.7%	85.1%	40.7%	89.6%	66.7%	81.4%
Passed Model	Both Pre and Pst Cnt	12	9,728	7	4,039	5	5,688
Diagnostics	Both Pre and Pst Pct	30.8%	41.6%	25.9%	37.9%	41.7%	44.7%
Passed Reliability	Both Pre and Pst Cnt	10	8,114	7	3,654	3	4,460
Screens	Both Pre and Pst Pct	25.6%	34.7%	25.9%	34.3%	25.0%	35.0%

OUTLIERS

An outlier screen was then applied to models with reliable pre and post usage data using the Interquartile Rule for Outliers (Tukey Fence). Cases where the percentage savings were greater or less than 1.5 times the interquartile range were dropped.

The outlier screen dropped approximately 11% of treatment group observations and 12% of comparison group cases with pre and post savings models.

ELECTRICITY IMPACT ANALYSIS

We developed state-level electricity savings results for two groups, those with non-electric space heat and for those with electric space heat. Our results are summarized in Table 2.7.

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Table 2.7 Electricity Fuel Consumption Analysis Results (State Level Results)

	Population		Treatme	nt Group				Compa	arison G	roup								
			Baseline					Baseline				Net		Percent		Estimated		
			Cons.	90%	Savings	90%		Cons.	90%	Savings	90%	Savings	90%	Savings	90%	Savings	90%	Realization
	n	n	(kWh)	CI	(kWh)	CI	n	(kWh)	CI	(kWh)	CI	(kWh)	CI	(%)	CI	(kWh)	CI	Rate (%)
Electric Sa	avings for I	Owellin	gs with No	n-Electr	ic Space 1	Heat												
Overall	1,067	406	10,396	456	925	211	3,513	10,104	458	217	122	718	234	6.2%	19%	655	30	109.6%
Electric Sa	avings for I	Owellin	gs with Ele	ectric Sp	ace Heat													
Overall	57	30	23,597	2,571	3,127	1,775	241	22,739	2,406	442	750	2,711	1,977	10.5%	8.0%	2,377	493	114.0%

Dwellings with non-electric space heat averaged 718 kWh net savings from lighting, refrigerators and freezers, water heating, and cooling measures. The average net savings for dwellings with electric heat averaged 2,711 kWh per dwelling.

COMPARISON OF SAMPLE AND OVERALL PROGRAM POPULATIONS

Measure-level savings are estimated for all weatherization clients. These are based upon the actual installed quantities and measure type (e.g., r-value and amount of insulation installed) and measured reductions in the air leakage rate. Consequently the dwelling-specific estimate savings provide a good basis of comparison between the sample and overall population. Table 2.8 provides a comparison of the estimated savings for the population and billing analysis sample for site-built single family homes and mobile homes.

Table 2.8 Estimated Savings for the Population and Billing Analysis Sample – Gas Heated Dwellings

		Natu	ral Gas		1	Elect	tricity	
	Population		Sample		Population		Sample	
	Est Savings	Count						
	(therms)		(therms)		(kWh)		(kWh)	
Site-Built Single Family	_				_			
Overall	287	1,100	283	700	546	1,221	610	215
New Opportunities	313	37	284	17	557	39	522	7
HACAP	272	95	293	56	398	100	423	14
Eastern IA	256	129	255	104	537	133	649	23
MATURA	217	21	200	10	513	23	829	1
MICA	276	66	282	43	505	85	625	11
Mid-Sioux	269	28	255	9	651	37	665	3
North Iowa	368	75	363	46	668	83	703	8
NE Iowa	202	70	192	44	311	91	394	14
New View	280	19	273	11	585	27	604	6
Threshold	288	81	286	50	569	90	525	18
IMPACT	291	27	299	17	487	30	593	4
SCICAP	263	22	268	9	512	24	769	3
SE Iowa	377	51	398	19	616	52	633	7
SIEDA	240	48	208	27	608	59	691	18
Upper Des Moines	271	99	264	76	471	105	567	17
West Central	266	43	250	31	634	52	768	9
CAA Siouxland	298	34	279	23	821	36	680	3
Polk County	332	155	339	108	626	155	663	49
Mobile Home	i						1	
Overall	182	99	190	63	463	236	447	20
Multi-Family			1		1		1	
Overall	272	49	276	22	482	94	532	9

The gas estimated savings compare well between the population and sample for the state overall gas results for all sectors. There is a little more variability between the population and sample at the agency levels but nothing of concern.

The electricity estimated savings show a little more variability between the population and sample at both the state and agency levels. The state (overall) savings for the population is about 10% lower than in our sample for site-built homes, 4% lower for mobile homes, and 9%

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for multifamily homes. These differences are not particularly large, and demonstrate that the range and quantities of measures installed in both the sample and population are reasonably similar.

It's important to recognize that differences in estimated savings between the sample and population don't directly affect the adjustment factors that are applied to the estimated savings. The adjustment factors are the percentage difference between the estimated and observed savings of the sample. For example, if the observed sample impacts are 10% greater than the sample estimated impacts, then a 10% adjustment is applied to all houses. We need only be concerned if there are large differences between the estimated savings of the sample and the population, and the above table indicates that there are no significant differences.

Table 2.9 provides a similar comparison for the electricity billing analysis. As before, we see no large differences between the estimated savings for the population and the billing analysis sample. Note that the estimated electricity savings in the first line of Table 2.9 includes dwellings that are heated with any non-electric fuel (propane, fuel oil, natural gas, wood, etc.). Estimated electricity savings shown in Table 2.8 are for housing units heated with natural gas.

Table 2.9 Estimated Savings for the Population and Billing Analysis Sample - Electricity

Population and Estimated Electricity Savings (State)

	Popula	ation	Samı	ole
	Est Savings	Count	Est Savings	Count
	(kWh)		(kWh)	
Overall, non-electric ht	593	2,815	655	406
Overall, electric heat	2,464	161	2,377	30

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3. DETAILED SPENDING AND IMPACT PROFILES BY FUNDING ENTITY

This section provides tables of spending and impacts for the utilities, the state, and the overall program. The tables are designed to provide information to meet the filing requirements for cost recovery.

The summaries of impacts for state and utility funding are similar in format to those provided in the earlier SLICE reports.

We show a second table for each of the utilities in this report. These tables show the combined impacts of electricity and natural gas measures from all funding sources. These tables should prove useful for the energy and demand planning departments at the utilities to account for the aggregate impacts of the low-income program, and not just the impacts funded by a specific utility.

Total Reported Labor, Materials and Utility Admin Expenditures: \$20,178,427

Utility Administration Expenditures: \$274,662

Total Labor and Material Expenditures: \$19,903,765

							1					1	1		Dilline 4	dinated 5	irst-Year S	ovinac				1	Avores	a Dillin-	Adjusted		Voor Co		d Covir-	•		
	Nur	nber of	Dwelling	gs with I	Impac	ts	Numb	er of Dv	vellings v	vith kWh	Impacts				billing A	Aujusted F	ıı st- rear S	avings					Averag		elling Re				u saving	5		
			•	•	Fuel		Seas					Spending or Materials		mmer	Electricity	inter	Annual		Gas Annual	Pronane	Fuel Oil		ending on	Sumn		ctricity		nnual	Ga Pk-Day	is Annual	Pronane	Fuel Oil Other
Measure	Total	Electric	Gas	Propane			Cooling					& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms		gallons		Labor (\$)							therms		gallons Mbtu
Total Efficiency Measures	1,463	1,463	1,248	127	7	7 0	1,460	1,463				11,031,637	304.1		257.9		1,002,126	3,183	306,262	30,606	977	0	7,540	0.208		0.176		685	2.55	245	241	140 -
Total Shell & Htg. Sys. Repl	1,463		1,248	127		7 0		1,462				9,123,235		298,387		315,282	613,668		272,180	29,214	977	0	6,236	0.185			216	420	2.39	218		140 -
Total Shell Measures Wall Insul.	1,463 806	1,462 720	1,248 716	127 60		7 0	1,429 718	1,462 28				5,998,930 1,534,302		298,387 114,793	204.0 21.6	312,719 33,128	611,106 147,921	1,800 592	164,116 53,995	17,530 4,357	515 129	0	4,100 1,904	0.185 0.133		0.140 0.771	214 1.183	418 205	1.44 0.83	132 75	138	74 - 64 -
Open Blown Ceiling Insul	1,192	1,087		106		2 U 5 O		28 64				1,000,414	95.2	114,793		76,020	195,897	592		6,359	223	0	1,904	0.133		0.771	1,183	180	0.83	75 48	60	64 - 45 -
Cavity Fill Insul	393	326	349	27	, 0	0 0	323	17				304,282	16.1	19,400	9.9	15,168	34,568	162	14,790	1,235	0	ō	774	0.050	60 (0.581	892	106	0.46	42	46	
Sloped Attic Insul Kneewall Insul	423 353	368 318	371 306	37 34				13 12				204,429 166,030		23,301 9,047	5.0 2.0	7,593 2,934	30,893 11,981	149 58		1,648 605	37 36	0	483 470	0.053 0.024		0.383 0.164	584 244	84 38	0.40 0.19	37 17	45 18	19 - 36 -
Infil. Reduction	1,435	1,309		125				81				1,182,412		23,885		17,516	41,401	230		2,358	62	0	824	0.024		0.140	216	32	0.19	17	19	9 -
Found./Crawl. Insul	577	193		45				25				437,676	10.6	12,831	5.8	8,983	21,814	103	9,436	1,058	34	0	759	0.058		0.233	359	113	0.21	19	24	11 -
Bandjoist Insul.	631	24	536	68				24				150,435		0		3,165	3,165	34	3,119	474	11	0	238	0.000		0.087	132	132	0.06	6	7	4 -
Furnace Blower Fan ¹ Exhaust Ventilation ²	1,381 1,111	1,363 1,111		127 92				1,363 1,111				1,018,951	0.0 -3.0	(24,748)		182,983 (34,769)	182,983 (59,517)	(7)		(66) (496)	(2) (14)	0	0 917	0.000 -0.003	(22) (0.087	134 (31)	134 (54)	(0.01)	(1)	(1)	(0) - (4) -
Total Heating System Repl	1,048	23		90		5 0	- 1,111	23				3,124,305		(24,748)		2,562	2,562			11,684	462	0	2,981	0.000	0 (0.020)	111	111	1.28	116		92 -
Condensing Htg Sys Rep	978	0		81		4 0	-	-				2,891,515	0.0	0		0	0	1,157	105,262	10,871	401	0	2,957	-	-	-	-	-	1.30	118	134	100 -
Non-Cond Htg Sys Repl Electric Htg Sys Repl	50 17	0 17		10 0			1	- 17				130,574 61,286	0.0	0		0 1,791	0 1,791	31 0	2,802	813 0	61 0	0	2,611 3,605	0.000	- 0 (0.068	105	105	0.80	72	81	61 -
Heat Pump Repl	6	6		0				6				40,930		0		772	772	0	0	0	0	0	6,822	0.000	0 (129	129	-		-	
Other Htg Sys Repl	0	0	0	0) (0 0	-	0				0	0.0	0		0	0	0	0	0	0	0	0	-	-	-	-	-	-		-	<u> </u>
							Numbe	r of Measi	ures Instal	led by Fu	el Type																					
	Tatal		C	D	Fuel		Tatal	Flantsia	C 1		Fuel		Summer		Winter		Annual	Pk-Day		Propane			:	Summer		inter		nnual F		Annual		Fuel Oil Other
Water Heating	Total 1,411	371	992	Propane 48		Other 0 0	7 Total 3,170	696	2,380	93	Oil Othe	0 1,602,796	kW 0.0		kW		kWh 47,167	therms 195.3	34,082	1,392	gallons 0	Mbtu 0	1,136	kW 0.000		kW 0.002			0.197	therms 34		gallons Mbtu
Temp. Reduct.	1	1	0	0) (0 0	1	1	0	0	0	0 0	0.0		0.0		113	0.0	0	0	0	0	0	0.000	(0.000		113	-	-	-	
WH Wrap Pipe Insul.	0 1,271	0 338	0 894	0 39			0 1,271	0 338	0 894	0 39	0	0 0 0 18,774	0.0		0.0		0 14,298	0.0 7.7	0 2,657	0 117	0	0	0 15	0.000		0.000		42	0.01	- 3	- 3	
LF Showerhead	218	60		5 5			234	65	164	5	0	0 1.969	0.0		0.0		10.413	3.5		37	0	0	9	0.000		0.004		174	0.01	3 7	7	
Faucet Aerator	405	99	296	10				156	483	12	0	0 2,480			0.1		5,075	2.1	659	19	0	0	6	0.000		0.001		51	0.01	2	2	
Std-Eff Wtr Htr Repl. Hi-Eff or Electric Wtr Htr Repl.	0 1,012	0 136	0 839	0 37		0 0	1.012	0 136	0 839	0 37	0	0 0 0 1.579.574	0.0		0.0		0 17,269	0.0 181.9		0 1,219	0	0	0 1,561	0.000		0.003		- 127	0.22	- 35	- 33	
Lighting	1,106	1,106	009	31		0 0	9,610	9,609	039	31	0	58,937			30.1		155,210	-	25,075	1,219	-	-	53	0.015		0.003		140	-	-	-	
Refrigerator/Freezer ³	328	328					365	365				246,669			21.4		186,080	-		-	-	-	752	0.070		0.065		567	-		-	
Refrigerator Removal	2 278	2 278					2 281	2 281				115	0.1 17.4		0.1 16.2		1,023 141.184	-	-	-	-	-	58 759	0.063 0.062		0.059 0.058		512 508	-	-	-	
Refrigerator Exchange Freezer Removal	2/8	2/8					281	281				211,121 90	0.2		0.2		1,602			-	-	-	30	0.062		0.058 0.061		534	-	-		
Freezer Exchange	78	78					79	79				35,343			4.9		42,271	-	-	-	-	-	453	0.067		0.062		542	-	-	-	
Total Non-Efficiency Measures	1,471											8,872,127											6,031									
Misc Ins,Attic Access/Ven Duct Sealing	1,265 495											390,821											309 194									
Duct Sealing Duct Insulation	705											96,139 76,604											194									
Damming Material	761											47,282											62									
Htg. Sys. Tune & Clean	385											82,412											214									
Htg. Sys./WH Other Air Conditioning Work	346 30											179,010 1,846											517 62									
Water Heater Repair	95											12,318											130									
Refrigerator Coil Clean Waterbed Mattress Pad	0											0											0									
Programmable Tstat	56											5,185											93									
Unspecified Utility Meas	0											0											0									
CO Detector Smoke Detector	1,330 956											87,210 51,275											66 54									
Fuses	10											1,278											128									
Htg Sys Safety Check	136											20,278											149									
Htg Sys Ventilation Water Heater Ventilation	774 583											179,614 102,276											232 175									
Bathroom Ventilation	657											110,250											168									
Dryer Ventilation	979											104,599											107									
Kitchen Ventilation Other Exhaust Ventilation	97 476											12,428 22,264											128 47									
Asbestos Removal (Minor)	13											12,575											967									
Health/Safety Repairs	1,020											700,838											687									
Health/Safety Other Consumables	212 363											21,196 17,157											100 47									
General Repairs	1,286											930,041											723									
Meter Refrig (no action)	1,070											0											0									
Meter Freezer (no action) Support	406 1.412											5.302.237	1										3.755									
Transportation Allowance	285											33,695											118									
Landlord Contr Misc	0											0											0									
Landlord Contr Furnace Landlord Contr DHW	0											0											0									
Client Contr (Any)	0																						0									
Lead Safe Work	945											271,300				-							287									
Unspecifed/Other	0												1									1	0									

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed by the percentage of expenditures for each appliance is totaled to get the total number of measures installed by the percentage of expenditures for each appliance is totaled to get the total number of measures installed by the percentage of expenditures for each appliance is totaled to get the total number of measures installed in the percentage of expenditures for each appliance is totaled to get the total number of measures installed in the percentage of expenditures for each appliance is totaled to get the total number of measures installed in the percentage of expenditures for each appliance is totaled to get the total number of measures installed to get the total numbe

Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

impacts from communications are required by As-inches cut. 2. The winter impacts exceed summer occause mess are incommon sensor than the common of the commo

Total Reported Labor, Materials and Utility Admin Expenditures: \$13,769,231

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$13,769,231

	Nun	nber of	Dwelling	gs with I	Impac	ts	Numi	ber of D	vellings	with kW	/h Impacts					_	-	irst-Year S	avings					Averag		elling R	eceivin	t Year Cos		d Saving	js		
					Fuel		Sea					M	ending on laterials	Sun	nmer		inter	Annual	Pk-Day	Gas Annual	Propane	Fuel Oil	Other	Spending on Materials	Sumn	ner	ectricit Win	iter Ai	nnual	G: Pk-Day	as Annual	Propane	Fuel Oil Other
Measure	Total	Electric	Gas	Propane	Oil	Other	Cooling	Heating				& L	Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	gallons	gallons	Mbtu	& Labor (\$)	kW	kWh	kW	kWh k	(Wh	therms	therms	gallons	gallons Mbtu
Total Efficiency Measures	1,459	1,456	1,243	127	7	7 0	1,415	1,456					5,836,807	121.7		114.6		410,831	1,123	108,803	30,606	977	0	4,001	0.086		0.079		282	0.90	88	241	140 -
Total Shell & Htg. Sys. Repl Total Shell Measures	1,455 1,455		1,240	127 127		7 0	1,401	1,455 1,455					4,959,074 3,405,771	105.3 105.3	105,966 105,966	94.1 93.1	144,045 142,517	250,011 248,484		95,415 57,324	29,214 17,530	977 515	0	3,408 2,341	0.075		0.065	99 98	172 171	0.84	77 46	200	140 - 74 -
Wall Insul.	1,455	338	269	60		2 0	335	1,455				-	552,076	35.6	42,991	8.3	12,658	55,649	172	15,810	4,357	129	0	1,350	0.106		0.064	844	165	0.64	59	73	64 -
Open Blown Ceiling Insul	611	491	373	106	5 5		487	27					387,494	39.1	47,099	16.9	25,633	72,732	181	16,427	6,359	223	0	634	0.080	97	0.627	949	148	0.48	44	60	45 -
Cavity Fill Insul Sloped Attic Insul	175 196	129 136		27 37			128 136	6 5					102,420 69,311	5.2 6.5	6,276 7,816	2.2 1.9	3,378 2,915	9,654 10,732	45 39		1,235 1,648	0 37	0	585 354	0.041 0.048		0.366	563 583	75 79	0.36 0.34	33 31	46 45	 19 -
Kneewall Insul	176	129		34		1 0	127	5					64,143	3.1	3,691	0.8	1,227	4,918	19		605	36	0	364	0.046		0.163	245	38	0.34	16	18	36 -
Infil. Reduction	1,354	1,143		125			1,136	73					970,146	15.4	18,536	9.3	14,435	32,972	178			62	ő	717	0.014		0.128	198	29	0.16	15	19	9 -
Found./Crawl. Insul	264	75		45			69	10					175,893	3.6	4,305	2.0	3,139	7,443	43		1,058	34	0	666	0.052		0.204	314	99	0.23	21	24	11 -
Bandjoist Insul. Furnace Blower Fan ¹	263	12		68			-	12					65,336	0.0	0	0.9	1,389	1,389	9		474	11	0	248	0.000		0.076	116	116	0.05	5	7	4 -
Exhaust Ventilation	1,302	1,302	1,168 953	127			-	1,302 1,111					1,018,951	0.0 -3.0	0 (24,748)	73.3	112,512 (34,769)	112,512	(4)		(66) (496)	(2)	0	917	0.000 -0.003		0.056	86 (31)	86	(0.00)	(0)	(1)	(0) -
Total Heating System Repl	543	1,111		92			1,111	1,111					1,553,303	-3.0	(24,748)	(22.6)	1,527	(59,517) 1,527			11,684	462	0		0.000		0.059	90	(54) 90	0.06)	(5)		92 -
Condensing Htg Sys Rep	477	0		81			-						1,348,459	0.0	0	0.0	0	0	387	35,288	10,871	401	0	2,827	-	-	-	-	-	0.99	90	134	100 -
Non-Cond Htg Sys Repl	50	0		10			-	-					130,574	0.0	0	0.0	0	0	31	2,802		61	0	2,611	-	-	-	-	-	0.80	72	81	61 -
Electric Htg Sys Repl Heat Pump Repl	11	11		0			-	11					40,339 33,930	0.0	0	0.6	874 653	874 653	0	0	0	0	0	3,667 5,655	0.000		0.053	79	79 109	-		-	
Other Htg Sys Repl	6	6		0			1	6					33,930	0.0	0	0.4	053	053	0	0		0	0	5,055	0.000	0	0.070	109	109	1	-	-	1 1
													ŭ						ľ				,										
					Fuel		Numbe	r of Meas	ures Insta	lled by F	uel Type Fuel		l.	Summer		Winter		Annual	Pk-Dav	Annual	Propane	Euol Oil	Othor		Summer		Vinter		nnual F	Dk Day	Annual	Bronar -	Fuel Oil Other
	Total	Electric	Gas	Propane			Total	Electric	Gas	Propane	Oil Ot	her	ľ	kW		kW		kWh	therms			gallons		,	kW	,	kW			therms	therms		gallons Mbtu
Water Heating	896	187	661	48	3 0			284	897	93	0	0	739,652	0.0		0.3		20,261	77.1	13,388	1,392	0	0	826	0.000		0.002	•	108	0.117	20	29	
Temp. Reduct.	1	1	0	0) (0	1	1	0	0	0	0	0	0.0		0.0		113	0.0	0	0	0	0	0	0.000		0.000		113	-	-	-	
WH Wrap Pipe Insul.	0 523	0 142	0 342	0 39			523	0 142	0 342	0 39	0	0	8,195	0.0		0.0		6,013	0.0 2.9		0 117	0	0	16	0.000		0.000		42	0.01	- 3	- 3	1 1
LF Showerhead	78	25		5			83	26	52	5	0	0	758	0.0		0.0		4,328	1.1	341	37	0	0	10	0.000		0.004		173	0.02	7	7	
Faucet Aerator	134	30	94	10			226	51	162	12		0	933	0.0		0.0		1,656	0.7	230		0	0	7	0.000		0.001		55	0.01	2	2	
Std-Eff Wtr Htr Repl.	0	0	0	0		0	0	0	0	0	0	0	0	0.0		0.0		0	0.0		0	0	0	0	-		-		-	-	-	-	
Hi-Eff or Electric Wtr Htr Repl. Lighting	682 395	83 395	562	37	' () 0	442 3,287	64 3,287	341	37	0	U	729,766 21.612	0.0 5.3		0.2 9.8		8,150 50,445	72.3	11,794	1,219	0	0	1,070 55	0.000		0.002		98 128	0.13	21	33	
Refrigerator/Freezer ³	197	197					176	176					116,469	11.1		10.4		90.114			-	-		591	0.056		0.053		457	-		-	
Refrigerator Removal	2	2					2	2					115	0.1		0.1		1,023	-	-	-	-	-	58	0.063		0.059		512	-	-	-	
Refrigerator Exchange	153	153					123	123					95,903	7.6		7.1		61,758	-	-	-	-	-	627	0.050		0.046		404	-	-	-	
Freezer Removal Freezer Exchange	2 55	2 55					2 49	2 49					50 20,401	0.1 3.2		0.1 3.0		1,068 26,265	1 1	- 1	1	- 1	- :	25 371	0.066		0.061 0.055		534 478	-			
																					1											1	
Total Non-Efficiency Measures	1,471											7	7,932,424 348.718											5,393 285									
Misc Ins,Attic Access/Ven Duct Sealing	1,225 485												93,773											193									
Duct Insulation	663												73,098											110									
Damming Material	761												47,282											62									
Htg. Sys. Tune & Clean Htg. Sys./WH Other	288 346												64,304 179,010											223 517									
Air Conditioning Work	346												1.846											62									
Water Heater Repair	95												12,318											130									
Refrigerator Coil Clean	0												0											0									
Waterbed Mattress Pad Programmable Tstat	0												0 100											100									
Unspecified Utility Meas	Ó												0											0									
CO Detector	1,330												87,210											66									
Smoke Detector Fuses	956 10												51,275 1,278											54 128									
Htg Sys Safety Check	136												20,278											149									
Htg Sys Ventilation	441												99,648											226									
Water Heater Ventilation Bathroom Ventilation	286 657												47,802 110,250											167 168									
Dryer Ventilation	979												104,599											107									
Kitchen Ventilation	97												12,428											128									
Other Exhaust Ventilation	476												22,264											47									
Asbestos Removal (Minor) Health/Safety Repairs	13 962												12,575 693.384											967 721									
Health/Safety Other	212												21,196											100									
Consumables	363												17,157											47									
General Repairs	1,082 834												806,162											745									
Meter Refrig (no action) Meter Freezer (no action)	834 327												0											0									
Support	1,397											4	4,699,477											3,364									
Transportation Allowance	285												33,695											118									
Landlord Contr Misc Landlord Contr Furnace	0												0											0									
Landlord Contr Furnace Landlord Contr DHW	0												0											0									
Client Contr (Any)	ō												ō											ŏ									
Lead Safe Work	945												271,300							-				287									
Unspecifed/Other	0												0											0									

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

The total number of dwellings ma Dalhoff Associates, LLC

mpacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed

Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Utility Administration Expenditures: \$144,677

Total Labor and Material Expenditures: \$3,032,654

																	Tota	i Labor ai	iu materia	ii Expei	iuituies.	\$3,032,654
									E	Billing A	djusted F	irst-Year S	avings		Averag	je Billing	, Adjus	ted First	t Year C	osts aı	nd Savin	gs
		r of Dwel			of Dwellin				_				l	_		per Dv		Receivir		ures		
	v	vith Impac	ts	with Elec Seas	tricity Impac	ts	Spending on Materials	Sum		lectricity Wir	nter	Annual	Pk-Day	Gas Annual	Spending on Materials	Sumr		Electricity Win		Δnnual	Pk-Day	ias Annual
Measure	Total	Electric	Gas	Cooling			& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	& Labor (\$)	kW	kWh	kW			therms	therms
Total Efficiency Measures	655	569	419	558	569		2,550,258	99.5		69.7		310,473	978	93,161	3,894	0.178		0.123		546	2.33	222
Total Shell & Htg. Sys. Repl	631	544	418	481	543		2,080,183	87.3	105,301	52.7	81,246	186,547	926	84,028	3,297	0.182	219	0.097	150	343	2.21	201
Total Shell Measures	630	543	418	481	542		1,315,621	87.3	105,301	52.2	80,364	185,666	549	49,919	2,088	0.182	219	0.096	148	342	1.31	119
Wall Insul. Open Blown Ceiling Insul.	318 461	258 378	230 332	258 378	10 15		486,761 303,557	32.2 32.3	38,809 38,959	7.7 11.4	12,084 17,379	50,893 56,337	206 147	18,717 13,405	1,531 658	0.125 0.085	150 103	0.773 0.762	1,208 1,159	197 149	0.90 0.44	81 40
Cavity Fill Insul.	129	102	91	100	3		86,689	5.8	7,033	3.4	5,220	12,254	49	4,442	672	0.058	70	1.141	1,740	120	0.54	49
Sloped Attic Insul.	177	144	133	144	4		68,632	7.2	8,660	1.1	1,694	10,354	56	5,134	388	0.050	60	0.280	424	72	0.42	39
Kneewall Insul. Infil. Reduction	139 403	113 321	105 294	113 321	3 19		55,208 133,330	2.6 2.9	3,096 3,485	0.4 1.6	561 2,458	3,657 5,943	16 31	1,470 2,818	397 331	0.023	27 11	0.125 0.084	187 129	32 19	0.15 0.11	14 10
Found./Crawl. Insul.	206	76	176	74	9		133,496	4.4	5,259	2.3	3,534	8,793	29	2,628	648	0.059	71	0.064	393	116	0.11	15
Bandjoist Insul.	205	9	196	-	9		47,949	0.0	0	0.9	1,400	1,400	16	1,454	234	0.000	0	0.102	156	156	0.08	7
Furnace Blower Fan ¹	605	518	418	-	518		0	0.0	0	23.3	36,035	36,035	(2)	(147)	0	0.000	0	0.045	70	70	(0.00)	(0)
Exhaust Ventilation	0	0	0	0	0		0	0.0	0	0.0	0	0	0	0	0	-			-	-	-	-
Total Heating System Repl Condensing Htg Sys Repl	300 292	8	292 292	-	8		764,561 743,614	0.0	0	0.6	881 0	881	376 376	34,109 34,109	2,549 2,547	0.000	0	0.070	110	110	1.29 1.29	117 117
Non-Cond Htg Sys Repl	0	0	0	-	-		0	0.0	0	0.0	0	0	0	0 1,100	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	7	7	0	-	7		17,447	0.0	0	0.5	839	839	0	0	2,492	0.000	0	0.076	120	120	-	-
Heat Pump Repl Other Htg Sys Repl	1 0	1	0	-	1 0		3,500 0	0.0	0	0.0	43 0	43 0	0	0	3,500	0.000	0	0.029	43	43	-	-
Other ring by streps	1							0.0					Ü		Ü							
					per of Measu Fuel Type	ires		Summer	,	Winter		Annual	Pk-Day	Annual		Summer		Winter		Δnnual	Pk-Day	Annual
	Total	Electric	Gas	Total		Gas		kW		kW		kWh	therms	therms		kW		kW		kWh	therms	therms
Water Heating	435	147	288	846 0	256	590	381,951	0.0		0.3		16,915	52.7	9,133	878	0.000		0.002		115	0.183	32
Temp. Reduct. WH Wrap	0	0	0	0	0	0	0	0.0		0.0		0	0.0	0	0	-					-	-
Pipe Insul.	342	134	208	342	134	208	3,707	0.0		0.0		5,654	1.8	630	11	0.000		0.000		42	0.01	3
LF Showerhead	62	21	41	64	22	42	392	0.0		0.1		3,643	0.8	261	6	0.000		0.004		173	0.02	6
Faucet Aerator Std-Eff Wtr Htr Repl.	116 0	36 0	80 0	172 0	54 0	118	407 0	0.0		0.0		1,757 0	0.5 0.0	152 0	4	0.000		0.001		49	0.01	2
Hi-Eff or Electric Wtr Htr Repl.	293	49	244	268	46	222	377,447	0.0		0.1		5,862	49.6	8,090	1,288	0.000		0.003		120	0.20	33
Lighting	389	389		3,324	3,323		16,918	5.8		10.8		55,650	-	-	43	0.015		0.028		143	-	-
Refrigerator/Freezer³ Refrigerator Removal	102	102		101	101 0		71,206 0	6.3 0.0		5.9 0.0		51,361 0	-	-	698	0.062		0.058		504	-	-
Refrigerator Exchange	86	86		81	81		61,766	5.0		4.7		40,540	_	-	718	0.058		0.054		471	-	-
Freezer Removal Freezer Exchange	1 20	1 20		1 19	1 19		40 9,400	0.1 1.3		0.1 1.2		534 10,287	-	-	40 470	0.066		0.061 0.059		534 514	-	-
Freezer Exchange	20	20		19	19		9,400	1.3		1.2		10,201	-		470	0.003		0.059		314	-	<u> </u>
Total Non-Efficiency Measures Misc Ins,Attic Access/Vent	653 176						482,396 25,202								739 143							
Duct Sealing	12						2,367								197							
Duct Insulation	11						1,501								136							
Damming Material Htg. Sys. Tune & Clean	0 59						0 6,410								0 109							
Htg. Sys./WH Other	0						0,410								0							
Air Conditioning Work	0						0								0							
Water Heater Repair Refrigerator Coil Clean	0						0								0							
Waterbed Mattress Pad	0						ő								0							
Programmable Tstat	27						2,610								97							
Unspecified Utility Meas. CO Detector	0						0								0							
Smoke Detector	0						ő								ő							
Fuses	0						0								0							
Htg Sys Safety Check Htg Sys Ventilation	0 208						0 38,001								0 183							
Water Heater Ventilation	138						20,740								150							
Bathroom Ventilation	0						0								0							
Dryer Ventilation Kitchen Ventilation	0						0								0							
Other Exhaust Ventilation	0						ő								0							
Asbestos Removal (Minor)	0						0								0							
Health/Safety Repairs Health/Safety Other	61 0						3,784 0								62 0							
Consumables	0						0			-					0							
General Repairs	312						77,965								250							
Meter Refrig (no action) Meter Freezer (no action)	134 49						0								0							
Support (110 action)	651						303,815								467							
Transportation Allowance	0						0								0							
Landlord Contr Misc Landlord Contr Furnace	0						0								0							
Landlord Contr PHW	0						0								0							
Client Contr (Any)	0						0								0							
Lead Safe Work Unspecifed/Other	0						0								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refligeration measure regiscements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Alliant - Interstate Power and Light Billing Adjusted Impacts for All Customers of the Utility From All Funding Sources

	Numbe	er of Dwe	llinas	Numbe	r of Dwellinas		I	Billing /	Adjusted I	First-Year	Savings		Average per Dv		g Adjus Receiv		•		
		vith Impact	J -		ctricity Impacts		E	lectricity	1		1	Gas		·	Electrici	ty		(Gas
		•		Seas	son	Sur	nmer	w	inter	Annual	Pk-Day	Annual	Sumr	ner	Win	nter	Annual	Pk-Day	Annual
Measure	Total	Electric	Gas	Cooling	Heating	kW	kWh	kW	kWh	kWh	therms	therms	kW	kWh	kW	kWh	kWh	therms	therms
Total Efficiency Measures	695	604	429	602	604	114.7		95.2		378,886	1,112	105,994	0.191		0.158		627	2.59	247
Total Shell & Htg. Sys. Repl	695	604	429	588	604	99.4	111,942	74.8	115,153	227,095	1,050	95,271	0.169	190	0.124	191	376	2.45	222
Total Shell Measures	695	604	429	588	604	99.4	111,942	73.9	113,748	225,689	614	55,865	0.169	190	0.122	188	374	1.43	130
Wall Insul.	339	276	237	276	11	35.4	42,719	9.0	14,089	56,808	217	19,660	0.128	155	0.814	1,281	206	0.91	83
Open Blown Ceiling Insul.	505	414	345	414	17	36.4	43,950	12.3	18,668	62,618	156	14,211	0.088	106	0.724	1,098	151	0.45	41
Cavity Fill Insul.	134	105	93	103	3	6.1	7,362	3.6	5,535	12,897	50	4,565	0.059	71	1.205	1,845	123	0.54	49
Sloped Attic Insul.	190	151	142	151	4	7.6	9,118	1.1	1,694	10,812	60	5,507	0.050	60	0.280	424	72	0.43	39
Kneewall Insul.	149	121	109	121	3	2.9	3,489	0.4	561	4,050	17	1,536	0.024	29	0.125	187	33	0.15	14
Infil. Reduction	651	533	419	532	30	7.6	9,134	4.4	6,764	15,898	87	7,896	0.014	17	0.146	225	30	0.21	19
Found./Crawl. Insul.	217	81	184	78	10	4.6	5,553	2.5	3,829	9,382	30	2,715	0.059	71	0.247	383	116	0.16	15
Bandjoist Insul.	218	11	207	-	11	0.0	0	1.0	1,600	1,600	17	1,525	0.000	0	0.095	145	145	0.08	7
Furnace Blower Fan ¹	662	571	429	-	571	0.0	0	48.0	73,991	73,991	(2)	(222)	0.000	0	0.084	130	130	(0.01)	(1)
Exhaust Ventilation ²	484	422	289	422	422	-1.2	(9,382)	(8.4)	(12,983)	(22,366)	(17)	(1,528)	-0.003	(22)	(0.020)	(31)	(53)	(0.06)	(5)
Total Heating System Repl	328	12	316	-	12	0.0	0	0.9	1,405	1,405	435	39,406	0.000	0	0.076	117	117	1.38	125
Condensing Htg Sys Repl	307	0	307	-	-	0.0	0	0.0	0	0	424	38,362	-	-	-	-	-	1.38	125
Non-Cond Htg Sys Repl	11	0	11	-	-	0.0	0	0.0	0	0	12	1,043	-	-	-	-	-	1.06	95
Electric Htg Sys Repl	11	11	0	-	11	0.0	0	0.8	1,285	1,285	0	0	0.000	0	0.075	117	117	-	-
Heat Pump Repl	1	1	0	-	1	0.0	0	0.1	120	120	0	0	0.000	0	0.082	120	120	-	-
Other Htg Sys Repl	0	0	0	-	0	0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	-
					ber of Measures														
	l		_		y Fuel Type	Summer		Winter		Annual	Pk-Day	Annual	Summer		Winter			Pk-Day	Annual
	Total	Electric	Gas		Electric Gas	kW		kW		kWh	therms	therms	kW		kW		kWh	therms	therms
Water Heating	475	164	311	0	0 0			0.3		18,947	61.9	10,723	0.000		0.002		116	0.199	34
Temp. Reduct.	0	0	0	0	0 0	0.0		0.0		0	0.0	0	-		-		-	-	-
WH Wrap	0	0	0	0	0 0	0.0		0.0		0	0.0	0	-		-			-	-
Pipe Insul.	414	151	263	0	0 0	0.0		0.0		6,374	2.3	812	0.000		0.000		42	0.01	3
LF Showerhead	63	22	41	0	0 0	0.0		0.1		3,814	0.8	261	0.000		0.004		173	0.02	6
Faucet Aerator	119	37	82	0	0 0	0.0		0.0		1,789	0.5	155	0.000		0.001		48	0.01	2
Std-Eff Wtr Htr Repl.	0	0	0	0	0 0	0.0		0.0		0	0.0	0	-		-		-	-	-
Hi-Eff or Electric Wtr Htr Repl.	314	55	259	0	0 0	0.0		0.2		6,970	58.2	9,494	0.000		0.003		127	0.22	37
Lighting	418	418		0	0	6.4		11.8		60,698	-	-	0.015		0.028		145	-	-
Refrigerator/Freezer ³	123	123		0	0	8.9		8.3		72,147	-	-	0.072		0.067		587	-	-
Refrigerator Removal	2	2		0	0	0.1		0.1		1,023	-	-	0.063		0.059		512	-	-
Refrigerator Exchange	97	97		0	0	6.1		5.7		49,742	-	-	0.063		0.059		513	-	-
Freezer Removal	3	3		0	0	0.2		0.2		1,602	-	-	0.066		0.061		534	-	-
Freezer Exchange	37	37		0	0	2.4		2.3		19,779	-	-	0.066		0.061		535	-	-

Utility Administration Expenditures:

\$32,897 Total Labor and Material Expenditures: \$614,664

							Billing A	djusted F	irst-Year S	avings		Averaç				ear Costs a	nd Savin	gs
		er of Dwe		Number of Dwellings with Electricity Impacts	Spending on		Electricity			1	Gas	Spending on	per Dv	welling	Receiving Electricity	Measures		as
		with impac	cts	Season	Materials	Summer	Wir	nter	Annual	Pk-Day	Annual	Materials	Sum	mer	Winter	r Annual	Pk-Day	Annual
Measure	Total	Electric	Gas	Cooling Heating	& Labor (\$)	kW kWh	kW	kWh	kWh	therms	therms	& Labor (\$)	kW	kWh	kW I	kWh kWh	therms	therms
Total Efficiency Measures	130	0	130	0 0	514,513	0.0	0.0		0	195	18,835	3,958	-		-	-	1.50	145
Total Shell & Htg. Sys. Repl	118	0	118	0 0	423,216	0.0	0 0.0	0	0	184	16,948	3,587		-	-		1.56	144
Total Shell Measures	118	0	118	0 0	214,663	0.0	0.0	0	0	97	8,966	1,819	-	-	-		0.82	76
Wall Insul.	61 84			0 0	83,963	0.0	0 0.0	0	0		3,389	1,376 584	-	-	-		0.60 0.28	56
Open Blown Ceiling Insul. Cavity Fill Insul.	29			0 0 0	49,018 25,890	0.0 0.0	0 0.0	0	0	23 14	2,161 1,312	584 893	-	-	-		0.28	26 45
Sloped Attic Insul.	30			0 0	10,320	0.0	0 0.0	0	0	9	840	344				1 1	0.49	28
Kneewall Insul.	21		21	0 0	7,783	0.0	0.0	0	0	4	333	371	-	-	-		0.17	16
Infil. Reduction	51			0 0	14,670	0.0	0.0	0	0	6	533	288	-	-	-		0.11	10
Found./Crawl. Insul.	28 43			0 0	13,221 9,798	0.0 0.0	0 0.0 0 0.0	0	0	3 2	259 159	472 228	-	-	-	: :	0.10	9 4
Bandjoist Insul. Furnace Blower Fan ¹	118			- 0	9,798	0.0	0 0.0	0	0	(0)					-		(0.00)	(0)
Exhaust Ventilation	0			0 0	0	0.0	0 0.0	0	0	0	(21)	0			_		(0.00)	(0)
Total Heating System Repl	83				208,553	0.0	0 0.0	0	0		7,982	2,513	-	-	-	1 1	1.05	96
Condensing Htg Sys Repl	83				208,553	0.0	0.0	0	0	87	7,982	2,513	-	-	-		1.05	96
Non-Cond Htg Sys Repl Electric Htg Sys Repl	0			- 0	0	0.0 0.0	0 0.0	0	0	0	0	0	-	-	-		-	-
Heat Pump Repl	0			- 0	0	0.0	0 0.0	0	0	0	0	0	-			: :	-	
Other Htg Sys Repl	ő			- 0	0	0.0	0 0.0	ő	0	ő	ő	Ö	-	-	-		-	
				Number of Measures														
	Total	Electric		by Fuel Type Total Electric Gas		Summer kW	Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW	Annual kWh	Pk-Day therms	Annual therms
Water Heating Temp. Reduct.	92			169 0 169 0 0 0	91,297	0.0	0.0		0	10.8	1,888	992	-		-	-	0.117	21
WH Wrap	0			0 0 0	0	0.0	0.0		0	0.0	0	0	-			- 1	-	
Pipe Insul.	80			80 0 80	1,213	0.0	0.0		0	0.5	187	15	-		-	-	0.01	2
LF Showerhead	5			5 0 5	50	0.0	0.0		0	0.1	31	10	-		-	-	0.02	6
Faucet Aerator Std-Eff Wtr Htr Repl.	18 0			29 0 29 0 0 0	127 0	0.0 0.0	0.0 0.0		0	0.1	35 0	7 0	-		-	-	0.01	2
Hi-Eff or Electric Wtr Htr Repl.	63			55 0 55	89,907	0.0	0.0		0	10.0	1,635	1,427					0.16	26
Lighting	0	0	1	0 0	0	0.0	0.0		0	-	-	0	-		-	-	-	-
Refrigerator/Freezer ³	0			0 0	0	0.0	0.0		0		-	0			-	-	-	-
Refrigerator Removal Refrigerator Exchange	0			0 0	0	0.0 0.0	0.0 0.0		0	-	-	0	-		-	-	-	-
Freezer Removal	0			0 0	ő	0.0	0.0		0	-	-	ő			-	_	-	-
Freezer Exchange	0	0		0 0	0	0.0	0.0		0	-	-	0	-		-	-	-	
Total Non-Efficiency Measures	130				100,150							770						
Misc Ins,Attic Access/Vent	30				4,176							139						
Duct Sealing Duct Insulation	0 19				0 799							0 42						
Damming Material	0				0							0						
Htg. Sys. Tune & Clean	25				2,567							103						
Htg. Sys./WH Other	0				0							0						
Air Conditioning Work Water Heater Repair	0				0							0						
Refrigerator Coil Clean	ő				ő							0						
Waterbed Mattress Pad	0				0							0						
Programmable Tstat Unspecified Utility Meas.	1 0				100 0							100						
CO Detector	0				0							0						
Smoke Detector	0				0							0						
Fuses Htg Sys Safety Check	0				0							0						
Htg Sys Ventilation	67				13,934							208						
Water Heater Ventilation	49				9,680							198						
Bathroom Ventilation	0				0							0						
Dryer Ventilation Kitchen Ventilation	0				0							0						
Other Exhaust Ventilation	0				ő							o o						
Asbestos Removal (Minor)	0				0							0						
Health/Safety Repairs Health/Safety Other	12 0				849							71 0						
Consumables	0				0							0						
General Repairs	42				9,094							217						
Meter Refrig (no action)	0				0						-	0						
Meter Freezer (no action) Support	128				0 58,951							0 461						
Transportation Allowance	0				0							0						
Landlord Contr Misc	0				0							0						
Landlord Contr Furnace Landlord Contr DHW	0				0							0						
Client Contr (Any)	0				0							0						
Lead Safe Work	0				0							0						
Unspecifed/Other	0				0	Ì						0						

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Black Hills Energy Billing Adjusted Impacts for All Customers of the Utility From All Funding Sources

		er of Dwe	J -		r of Dwellings			_	Adjusted F	irst-Year		ge Billin welling	. ا						
	v	vith Impac	ts	Seas	tricity Impacts	Sumi		lectricity W	inter	Annual	Pk-Day	Gas Annual	Sum	nmer	Electrici Win		Annual	Pk-Day	Bas Annual
Measure	Total	Electric	Gas	Cooling		kW	kWh	kW	kWh	kWh	therms	therms	kW	kWh	kW	kWh	kWh	therms	therms
				_															
Total Efficiency Measures	173	0	173	0	0	0.0		0.0		0	322	31,472	-		-		-	1.86	182
Total Shell & Htg. Sys. Repl	173	0	173	0	0	0.0	0	0.0	0	0	303	28,165	-	-	-	-	-	1.75	163
Total Shell Measures	173	0	173	0	0	0.0	0	0.0	0	0	164	15,349	-	-	-	-	-	0.95	89
Wall Insul.	90	0	90	0	0	0.0	0	0.0	0	0	57	5,369	-	-	-	-	-	0.64	60
Open Blown Ceiling Insul.	138	0	138	0	0	0.0	0	0.0	0	0	39	3,611	-	-	-	-	-	0.28	26
Cavity Fill Insul.	43	0	43	0	0	0.0	0	0.0	0	0	21	2,010	-	-	-	-	-	0.50	47
Sloped Attic Insul.	41	0	41	0	0	0.0	0	0.0	0	0	13	1,204	-	-	-	-	-	0.31	29
Kneewall Insul.	34	0	34	0	0	0.0	0	0.0	0	0	5	462	-	-	-	-	-	0.15	14
Infil. Reduction	166	0	166	0	0	0.0	0	0.0	0	0	26	2,443	-	-	-	-	-	0.16	15
Found./Crawl. Insul.	56	0	56	0	0	0.0	0	0.0	0	0	6	604	-	-	-	-	-	0.12	11
Bandjoist Insul.	80	0	80	-	0	0.0	0	0.0	0	0	3	311	-	-	-	-	-	0.04	4
Furnace Blower Fan ¹	172	0	172	-	0	0.0	0	0.0	0	0	(1)	(60)	-	-	-	-	-	(0.00)	(0)
Exhaust Ventilation ²	138	0	138	0	0	0.0	0	0.0	0	0	(7)	(605)	-	-	-	-	-	(0.05)	(4)
Total Heating System Repl	128	0	128	-	0	0.0	0	0.0	0	0		12,815	-	-	-	-	-	1.08	100
Condensing Htg Sys Repl	125	0	125	-	-	0.0	0	0.0	0	0	136	12,558	-	-	-	-	-	1.09	100
Non-Cond Htg Sys Repl	3	0	3	-	-	0.0	0	0.0	0	0	3	257	-	-	-	-	-	0.93	86
Electric Htg Sys Repl	0	0	0	-	0	0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0	0	0	-	0	0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	
					ber of Measures	_					B. B							D. D	
	Total	Electric	Gas		/ Fuel Type Electric Gas	Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms	Summer	r	Winter kW		Annual kWh	therms	Annual therms
Water Heating	130		130	0	0 0			0.0		0	19.1	3,307	-		-		-	0.147	25
Temp. Reduct.	0		0	0	0 0	0.0		0.0		0	0.0	0	-		-		-	-	-
WH Wrap	0	0	0	0	0 0	0.0		0.0		0	0.0	0	_		-		_	-	-
Pipe Insul.	121	0	121	0	0 0	0.0		0.0		0	0.8	287	-		-		-	0.01	2
LF Showerhead	6	0	6	0	0 0	0.0		0.0		0	0.1	38	-		-		-	0.02	6
Faucet Aerator	21	0	21	0	0 0	0.0		0.0		0	0.1	41	-		-		-	0.01	2
Std-Eff Wtr Htr Repl.	0	0	0	0	0 0	0.0		0.0		0	0.0	0	-		-		-	-	-
Hi-Eff or Electric Wtr Htr Repl.	104	0	104	0	0 0	0.0		0.0		0	18.0	2,942	-		-		-	0.17	28
Lighting	0	0		0	0	0.0		0.0		0	-	-	-		-		-	-	-
Refrigerator/Freezer ³	0	0		0	0	0.0		0.0		0	-	-	-		-		-	-	-
Refrigerator Removal	0	0		0	0	0.0		0.0		0	-	-	-		-		-	-	-
Refrigerator Exchange	0	0		0	0	0.0		0.0		0	-	-	-		-		-	-	-
Freezer Removal	0	0		0	0	0.0		0.0		0	-	-	-		-		-	-	-
Freezer Exchange	0	0		0	0	0.0		0.0		0	-	-	-		-		-	-	

Total Reported Labor, Materials and Utility Admin Expenditures: \$2,584,303

Utility Administration Expenditures: \$97,088

Total Labor and Material Expenditures: \$2,487,215

	Numbe	r of Dwel	linas	Number	of Dwellings			1	Billing A	djusted F	irst-Year S	avings		Average Billing Adjusted First Year Costs and Savings per Dwelling Receiving Measures Soending on Electricity Gas							
		with Impact			tricity Impacts	Spending on		E	lectricity				Gas	Spending on	P		Electricit	y			ias
Measure	Total	Electric	Gas	Seas Cooling		Materials & Labor (\$)	Sum kW	mer kWh	Wi kW	nter kWh	Annual kWh	Pk-Day therms	Annual therms	Materials & Labor (\$)	Sumi kW	ner kWh	Win kW	ter kWh	Annual kWh	Pk-Day therms	Annual therms
Total Efficiency Measures	469	387	371	380	387	2,130,059	82.9		73.6		280,822	888	85,463	4,542	0.218		0.190		726	2.39	230
Total Shell & Htg. Sys. Repl	455	374	366	328	374	1,660,763	72.2	87,119	58.8	89,991	177,110	833	75,790	3,650	0.220	266	0.157	241	474	2.28	207
Total Shell Measures	455	374	366	328	374	1,062,875	72.2	87,119	58.7	89,838	176,957	527	47,907	2,336	0.220	266	0.157	240	473	1.44	131
Wall Insul.	261	203	219	203	7	411,502	27.4	32,993	5.6	8,386	41,379	177	16,080	1,577	0.135	163	0.795	1,198	204	0.81	73
Open Blown Ceiling Insul. Cavity Fill Insul.	376 142	303 109	294 122	301 108	23 9	260,345 89,283	28.0 5.1	33,819 6.091	21.4 4.3	33,008 6,570	66,827 12,660	182 54	16,505 4.896	692 629	0.093	112 56	0.931	1,435 730	221 116	0.62	56 40
Sloped Attic Insul.	137	110	110	110	4	56,165	5.7	6,824	1.9	2,983	9,807	44	4,045	410	0.047	62	0.474	746	89	0.44	37
Kneewall Insul	114	93	90	93	4	38,896	1.9	2,261	0.8	1,145	3,406	20	1,781	341	0.020	24	0.195	286	37	0.22	20
Infil. Reduction	174	138	150	138	7	64,266	1.5	1,864	0.4	623	2,487	16	1,433	369	0.011	14	0.060	89	18	0.10	10
Found./Crawl. Insul.	159	51	141	46	8	115,066	2.7	3,268	1.5	2,310	5,578	29	2,626	724	0.059	71	0.190	289	109	0.20	19
Bandjoist Insul.	136	6	130	-	6	27,352	0.0	0	0.2	375	375	7	679	201	0.000	0	0.041	63	63	0.06	5
Furnace Blower Fan	432	351	366	-	351	0	0.0	0	22.5	34,436	34,436	(2)	(138)	0	0.000	0	0.064	98	98	(0.00)	(0)
Exhaust Ventilation	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-		-	-	-	-
Total Heating System Repl	246 244	2	244	-	2	597,888	0.0	0	0.1	154	154	306	27,883	2,430	0.000	0	0.050	77	77	1.26	114
Condensing Htg Sys Repl Non-Cond Htg Sys Repl	244	0	244 0	-	-	590,888 0	0.0	0	0.0	0	0	306 0	27,883 0	2,422	-	-	-	-	-	1.26	114
Electric Htg Sys Repl	1	1	0		1	3,500	0.0	0	0.0	78	78	0	0	3,500	0.000	- 0	0.051	78	78		-
Heat Pump Repl	1	1	0	-	1	3,500	0.0	0	0.0	76	76	0	0	3,500	0.000	Ö	0.050	76	76	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
				by	er of Measures Fuel Type		Summer		Winter		Annual	Pk-Day	Annual		Summer		Winter		Annual		Annual
·	Total	Electric	Gas		Electric Gas	200 200	kW		kW		kWh	therms	therms	4 005	kW		kW			therms	therms
Water Heating Temp. Reduct.	366	71	295	879 0	156 723 0 0		0.0		0.2		9,991	54.6 0.0	9,673	1,065	0.000		0.003		141	0.185	33
WH Wrap	0	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0							-
Pipe Insul.	326	62	264	326	62 264		0.0		0.0		2,631	2.4	817	17	0.000		0.000		42	0.01	3
LF Showerhead	74	14	60	82	17 65	769	0.0		0.1		2,442	1.5	454	10	0.000		0.004		174	0.02	8
Faucet Aerator	137	33	104	225	51 174		0.0		0.0		1,662	0.8	242	7	0.000		0.001		50	0.01	2
Std-Eff Wtr Htr Repl.	0 276	0 29	0	0	0 0 26 220	0 382,455	0.0		0.0		0 3,257	0.0	0	0	0.000		0.003		- 112	0.20	-
Hi-Eff or Electric Wtr Htr Repl. Lighting	326	326	247	246	26 220 2,999	20,406	0.0 5.2		9.5		49,115	50.0	8,160	1,386 63	0.000		0.003		112	0.20	- 33
Refrigerator/Freezer ³	87	87		88	88	58,994	5.5		5.1		44,606			678	0.063		0.029		513	-	-
Refrigerator Removal	0	07		0	0	00,994	0.0		0.0		0	-		0/0	-		-		-	-	
Refrigerator Exchange	80			77	77	53,452	4.8		4.5		38,887	-	-	668	0.060		0.056		486	-	-
Freezer Removal	0	0		0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Freezer Exchange	10	10		11	11	5,542	0.7		0.7		5,719	-	-	554	0.070		0.066		572	-	
Total Non-Efficiency Measures	473					357,156								755							
Misc Ins,Attic Access/Vent	112					12,724								114							
Duct Sealing	0					0								0							
Duct Insulation	14					1,206								86							
Damming Material	0					0								0							
Htg. Sys. Tune & Clean Htg. Sys./WH Other	83 0					9,131 0								110							
Air Conditioning Work	0					0								0							
Water Heater Repair	Ö					0								o o							
Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat	27					2,375								88							
Unspecified Utility Meas. CO Detector	0					0								0							
Smoke Detector	0					0								0							
Fuses	0					0								0							
Htg Sys Safety Check	0					0								0							
Htg Sys Ventilation	170					28,030								165							
Water Heater Ventilation	162					24,053								148							
Bathroom Ventilation	0					0								0							
Dryer Ventilation Kitchen Ventilation	0					0								0							
Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor)	0					0								0							
Health/Safety Repairs	59					2,821								48							
Health/Safety Other	0					0								0							
Consumables	0					0								0							
General Repairs	163 102					36,820								226 0							
Meter Refrig (no action) Meter Freezer (no action)	102					0								0							
Support (110 action)	408					239,995								588							
Transportation Allowance	0					0								0							
Landlord Contr Misc	0					0								0							
Landlord Contr Furnace	0					0								0							
Landlord Contr DHW	0					0								0							
Client Contr (Any) Lead Safe Work	0					0								0							
Unspecifed/Other	0					ő								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refligeration measure regiscements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

MidAmerican Energy Billing Adjusted Impacts for All Customers of the Utility From All Funding Sources

	Numbe	er of Dwe	llinas	Numbe	r of Dwe	llinas			Billing A	Adjusted I	First-Year		Average per Dw							
Measure	v Total	with Impacts with Electricity Impacts Season Total Electric Gas Cooling Heating					Sur kW	mmer kWh	lectricity W kW	inter kWh	Annual kWh	Pk-Day therms	Gas Annual therms	Summ kW		Electrici Wir kW		Annual kWh	Pk-Day therms	Gas Annual therms
Total Efficiency Measures	729	614	603	613	614		140.2		119.4		452,617	1,634	157,973	0.229		0.195		737	2.71	262
Total Shell & Htg. Sys. Repl	728	613	603	605	613		123.0	138,624	96.3	147,444	286,068	1,526	138,910	0.203	229	0.157	241	467	2.53	230
Total Shell Measures	728	613	603	605	613		123.0	138,624	95.9	146,780	285,403	955	86,945	0.203	229	0.156	239	466	1.58	144
Wall Insul.	418	328	365	328	8		45.0	54,253	6.0	9,058	63,312	299	27,177	0.137	165	0.747	1,132	193	0.82	74
Open Blown Ceiling Insul.	607	492	495	490	32		47.1	56,753	26.1	40,133	96,886	320	29,035	0.096	116	0.817	1,254	197	0.65	59
Cavity Fill Insul.	231	181	205	180	12		7.7	9,298	5.3	8,171	17,468	83	7,568	0.043	52	0.443	681	97	0.40	37
Sloped Attic Insul.	208	162	173	162	6		8.5	10,243	3.0	4,587	14,830	69	6,365	0.052	63	0.499	765	92	0.40	37
Kneewall Insul.	184	146	152	146	5		3.2	3,829	0.8	1,154	4,984	34	3,128	0.022	26	0.157	231	34	0.23	21
Infil. Reduction	714	555	594	553	33		9.0	10,824	4.5	7,048	17,872	107	9,793	0.016	20	0.137	214	32	0.18	16
Found./Crawl. Insul.	263	73	240	67	10		4.0	4,783	2.0	3,053	7,837	63	5,780	0.059	71	0.198	305	107	0.26	24
Bandjoist Insul.	235	6	229	-	6		0.0	0	0.3	513	513	12	1,107	0.000	0	0.056	86	86	0.05	5
Furnace Blower Fan ¹	695	580	603	-	580		0.0	0	58.1	88,649	88,649	(4)	(348)	0.000	0	0.100	153	153	(0.01)	(1)
Exhaust Ventilation ²	604	511	499	511	511		-1.4	(11,360)	(10.2)	(15,588)	(26,948)	(29)	(2,660)	-0.003	(22)	(0.020)	(31)	(53)	(0.06)	(5)
Total Heating System Repl	459	6	453	-	6		0.0	0	0.4	664	664	571	51,965	0.000	0	0.071	111	111	1.26	115
Condensing Htg Sys Repl	428	0	428	-	-		0.0	0	0.0	0	0	554	50,463	-	-	-	-	-	1.29	118
Non-Cond Htg Sys Repl	25	0	25	-	-		0.0	0	0.0	0	0	17	1,501	-	-	-	-	-	0.67	60
Electric Htg Sys Repl	2	2	0	-	2		0.0	0	0.1	208	208	0	0	0.000	0	0.068	104	104	-	-
Heat Pump Repl	4	4	0	-	4		0.0	0	0.3	456	456	0	0	0.000	0	0.073	114	114	-	-
Other Htg Sys Repl	0	0	0	-	0		0.0	0	0.0	0	0	0	0	-	-	-	-	-	-	
					ber of Me															
	Total	Electric	Gas		y Fuel Typ Electric	e Gas	Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms	Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms
Water Heating	631	108	523	0	0	0	0.0		0.3		15,963	108.5	19,063	0.000		0.003		148	0.208	36
Temp. Reduct.	0	0	0_0	0	0	0	0.0		0.0		0	0.0	0	-		-		-	-	-
WH Wrap	0	0	0	0	0	0	0.0		0.0		0	0.0	0	_		_		_	_	_
Pipe Insul.	581	96	485	0	0	0	0.0		0.0		4,078	4.3	1,481	0.000		0.000		42	0.01	3
LF Showerhead	124	23	101	0	0	0	0.0		0.1		4,006	2.5	754	0.000		0.004		174	0.02	7
Faucet Aerator	235	45	190	0	0	0	0.0		0.1		2,410	1.5	459	0.000		0.001		54	0.01	2
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0.0		0.0		2, 0	0.0	0	-		-		-	-	
Hi-Eff or Electric Wtr Htr Repl.	495	43	452	0	0	0	0.0		0.1		5,469	100.3	16,369	0.000		0.003		127	0.22	36
Lighting	499	499		0	0		7.3		13.5		69,775	-	-	0.015		0.027		140	-	-
Refrigerator/Freezer ³	146	146		0	0		9.9		9.3		80,811	-	-	0.068		0.064		553	-	_
Refrigerator Removal	0	0		0	0		0.0		0.0		0	-	-	-		-		-	-	-
Refrigerator Exchange	131	131		0	0		8.2		7.6		66,350	-	-	0.062		0.058		506	-	-
Freezer Removal	0	0		0	0		0.0		0.0		0	-	-	-		-		-	-	-
Freezer Exchange	26	26		0	0		1.8		1.7		14,461	-	-	0.068		0.064		556	-	

4. DETAILED SPENDING AND IMPACT PROFILES BY AGENCY

This section provides tables of spending and impacts by agency for state and utility expenditures. Energy impacts were estimated according to the statewide algorithms, which include agency-specific adjustments.

Total Reported Labor, Materials and Utility Admin Expenditures: \$866,624

Utility Administration Expenditures:

\$866,624 Total Labor and Material Expenditures:

	Num	hor of I	wolling	e with	Impact	te	Nuu	mhor o	f Dwelli	ngs with	a kWh li	mnacte				Billing A	Adjusted F	irst-Year S	Savings					Averag	ge Billing per Dw					ınd Savin	gs		
	Num	Dei Oi I	weiling	jo with	Fuel			ason	i Dweili	iigs witi	I KVVII II	прасто	Spending on Materials	Sum	nmer		, inter	Annual		Gas Annual	Propane	Fuel Oil C	ther Ma	nding on terials	Sumn		Electricity Win	y ter	Annual	I Pk-Day	Gas Annual	Propane	Fuel Oil Other
Measure	Total	Electric	Gas	Propane	e Oil	Othe	r Coolin	g Hea	ting				& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	gallons	gallons I	lbtu & La	abor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	gallons	gallons Mbtu
Total Efficiency Measures	52	52	40	2	2 0		0 5	2	52				467,389	12.6		15.6		46,698	105	9,945	503	0	0	8,988	0.242		0.301		898	2.62	24	252	
Total Shell & Htg. Sys. Repl	52	52	40	2	2 0				52				400,755	11.3	13,019	13.9	21,278	34,296	99				0	7,707	0.223		0.268	409	660		22		
Total Shell Measures Wall Insul	52 25	52 25	40	- 2	2 0		0 5		52				252,014 33.575	11.3 3.5	13,019 4,209	13.7	20,994	34,013 4,641	55 14				0	4,846 1,343	0.223	255 168	0.264	404 216	654 186		120		
Open Blown Ceiling Insul	49	46	39	2					8				36,778	3.4	4,111		8,413	12,524	9				0	751	0.076	91	0.688	1,052			2		
Cavity Fill Insul	17	15	14	(3				15,466	0.9	1,076		2,577	3,653					0	910	0.059	72	0.562	859	244		5		
Sloped Attic Insul Kneewall Insul	21	19 18	17 18	2					2				12,513	1.3 0.6	1,605		1,015 699	2,620 1.437	8	697 328			0	596 308	0.070	84 41	0.332	508			4		
Infil. Reduction	21 52	49	40	2	2 0			-	10				6,459 65,796	0.6	738 790		2,533	3,323	8				0	1,265		17	0.152	233 253			18		
Found./Crawl. Insul	27	20	22					7	5				13,149	1.1	1,273	1.4	2,071	3,344	3	284	0	0	0	487	0.062	75	0.271	414	167	0.14	10	3 -	
Bandjoist Insul.	21	3	17	1	1 0				3				3,491	0.0	0		234	234	3				0	166	0.000	0	0.051	78			18		
Furnace Blower Fan	42	42	40	2			-		42				0	0.0	0		5,056	5,056	(0)				0	0	0.000	0	0.079	120			(
Exhaust Ventilation ² Total Heating System Repl	35 37	35	25	- 2	2 0		0 3	5	35				64,788 148,741	-0.1 0.0	(784)		(2,036)	(2,820)	(1)			0	0	1,851 4.020	-0.003		(0.038) 0.062	(58) 95		(0.05)	120		
Condensing Htg Sys Rep	34	0	32	- 2	2 0		-		-				138,200	0.0	0		0	0				0	0	4,065	-	-	-	-	-	1.38	12		
Non-Cond Htg Sys Repl	0	0	0	(-				0	0.0	0		0	0	0	0	0		0	0	-	-	-	-	-	-	-	-	
Electric Htg Sys Repl	3	3	0	(0 -		3				10,541	0.0	0		284	284					0	3,514	0.000	0	0.062	95	95		-	-	
Heat Pump Repl Other Htg Sys Repl	0	0	0	(0				0	0.0	0		0	0	0	0	0 0	0	0	0	-				- :	-	-		: :
																			T		1	-	-										
					Fuel		Num	ber of N	leasures	Installed		Typ€ uel		Summer		Winter		Annual	Pk-Day	Annual	Propage	Fuel Oil O	her		Summer		Winter		Annual	I Pk-Day	Annual	Propage	Fuel Oil Other
·	Total			Propan	e Oil	Oth				as Pro		Oil Othe		kW		kW		kWh	therms	therms	gallons	gallons I			kW		kW		kWh	therms	therms	gallons	gallons Mbtu
Water Heating Temp. Reduct.	50	21	28		1 0		0 5		21	29	1	0 0	58,786	0.0		0.0		1,496	5.3	875		0	0	1,176			0.001			0.190	3	1 26	
WH Wrap	0	0	0	(00			0 0	0	0	0	0 0	0	0.0		0.0		0	0.0			0	0	0	-				- :	-			
Pipe Insul.	19	14	5	Ċ	0 0		0 1	9	14	5	ō	0 0	424	0.0		0.0		599	0.0		0	0	0	22	0.000		0.000		43	0.01	:	-	
LF Showerhead	0	0	0	(0	0	0	0	0 0	0	0.0		0.0		0	0.0	0			0	0	-		-		-	-	-	-	
Faucet Aerator Std-Eff Wtr Htr Repl.	0	0	0	(0 n	0	0	0	0 0	0	0.0		0.0		0	0.0				0	0	-					-	-	1	1 1
Hi-Eff or Electric Wtr Htr Repl.	32	7	24	1	1 0		3	2	7	24	1	0 0	58,362	0.0		0.0		896	5.3				Ö	1,824			0.003		128		36	3 26	
Lighting	48	48					26		267				1,191	0.6		1.1		5,734		-	-	•	-	25			0.023		119			-	
Refrigerator/Freezer ³ Refrigerator Removal	9	9					1	0	10				6,657 15	0.6		0.6		5,172 522	-	-	-	•	-	740 15	0.071		0.066		575 522			-	
Refrigerator Exchange	6	6						6	6				5,084	0.1		0.1		3,049	-	- :			-	847			0.058		508		- :		
Freezer Removal	0	0							0				0	0.0		0.0		0	-	-	-	-	-	0	-		-			-	-	-	
Freezer Exchange	3	3						3	3				1,558	0.2		0.2		1,602	-	-	-	-	-	519	0.066		0.061		534	-	-	-	<u> </u>
Total Non-Efficiency Measures	52												399,236											7,678									
Misc Ins,Attic Access/Ven	51												32,929 560											646									
Duct Sealing Duct Insulation	1 16												1.883											560 118									
Damming Material	35												2,327											66									
Htg. Sys. Tune & Clean	9												1,514											168									
Htg. Sys./WH Other Air Conditioning Work	14 0												5,468 0											391 0									
Water Heater Repair	4												2,421											605									
Refrigerator Coil Clean	0												0											0									
Waterbed Mattress Pad Programmable Tstat	0												0											0									
Unspecified Utility Meas	0												0											ő									
CO Detector	51												2,398											47									
Smoke Detector Fuses	45 1												735 125											16 125									
Htg Sys Safety Check	0												0											0									
Htg Sys Ventilation	31												12,986											419									
Water Heater Ventilation Bathroom Ventilation	28 12												6,968 1,947											249 162									
Dryer Ventilation	33												3,534											102									
Kitchen Ventilation	0												0											0									
Other Exhaust Ventilation Asbestos Removal (Minor)	31												1,638 1.455											53 1.455									
Health/Safety Repairs	47												1,455 51,011											1,455									
Health/Safety Other	18												1,934											107									
Consumables General Repairs	0 50												0 45,748											0 915									
Meter Refrig (no action)	46												45,748											0									
Meter Freezer (no action)	24												0											0									
Support Transportation Allowance	52 0												217,679 0											4,186									
Landlord Contr Misc	0												0											0									
Landlord Contr Furnace	0												0											ō									
Landlord Contr DHW Client Contr (Any)	0												0											0									
	20												3,976										_	199									
Lead Safe Work													0										- 1	, ,									

Estimates are based upon reduced usage of the furnace due to shell improvements

Impacts from continuous exhaust fans required by ASHPAE 02. The winter impacts exceed summer because these also include healing season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$2,292,248

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$2,292,248

						1						1 1			Billing A	djusted F	irst-Year S	avings				Averag	ge Billing	Adjuste				nd Savin	gs		
	Numb	oer of D	wellings	with In	npacts		Numbe	er of Dv	ellings v	vith kWI	Impacts	Spending on			Electricity	-		-	Gas			Spending on	per Dw	elling Re	eceivin	•	sures		ias	ı	
Measure	Total E	lectric	Gas P	ropane	Fuel Oil (Other C	Seaso					Materials & Labor (\$)	Sun kW	nmer kWh	Wir	nter kWh	Annual kWh				Fuel Oil Othe gallons Mbt	r Materials	Summ kW	er	Win	ter		Pk-Day therms	Annual therms		Fuel Oil Other gallons Mbtu
Total Efficiency Measures	142	142	131	7	0	0	142	142				1,213,688	18.7		19.7		74,061	326	31,685	1,407	0	8,547	0.132		0.139		522	2.49	242	201	
Total Shell & Htg. Sys. Repl	142	142	131	7	0	0	141	142				1,037,562	14.9	15,290	15.1	23,214	38,505	304	27,969	1,325	0	7,307	0.106	108	0.106	163	271	2.32	214	189	
Total Shell Measures	142	142	131	7	0	0	141	142				765,183	14.9	15,290	14.8	22,857	38,147	180		1,020	0	5,389	0.106		0.105	161	269		126		
Wall Insul.	58	49	53 68	3 5	0	0	49 62	2				179,785	5.7	6,819	2.1	3,294	10,112	49	4,541	244	0	3,100		139	1.069	1,647	206	0.93	86		
Open Blown Ceiling Insul Cavity Fill Insul	76 17	63 10	16	0	0	0	10	3				70,254 23,963	5.3 0.5	6,390 580	2.7 0.8	4,203 1,231	10,593 1,811	55 11	5,017 1,004	447 0	0	924			0.799	1,401 1,231	168 181		74 63		1 1
Sloped Attic Insul	23	18	22	1	Ö	0	18	Ö				17,015	0.7	868	0.0	0	868	9	842	67	ő	740	0.040	48	0.000	0	48	0.42	38	67	
Kneewall Insul	24	20	22	1	0	0	20	1				10,342	0.6	665	0.1	78	744	5	487	24	0	431	0.028		0.051	78	37	0.24	22		
Infil. Reduction Found./Crawl. Insul	139 79	121 21	128 72	7	0	0	120 19	4				157,497 101,352	1.6 0.9	1,955 1,143	0.6 0.9	914 1,439	2,869 2,582	29 28	2,634 2,550	123 138	0	1,133 1,283			0.148	228 480		0.22	21 35		
Randioist Insul	79 56	3	72 50	3	0	0	19	3				12,016	0.9	1,143		1,439 256	2,582	28	2,550	138	0		0.050		0.311	480 85	123		35		1 1
Furnace Blower Fan ¹	138	138	131	7	0	0	-	138				0	0.0	0	9.8	15,043	15,043	(1)	(72)	(5)	0	0	0.000	0	0.071	109		(0.01)	(1		
Exhaust Ventilation ²	141	141	131	7	0	0	141	141				192,960	-0.4	(3,131)		(3,600)	(6,731)	(8)	(760)	(44)	0	1,369	-0.003	(22)	(0.017)	(26)	(48)	(0.06)	(6	(6)	
Total Heating System Repl	97	3	91	3	0	0	-	3				272,379	0.0	0	0.2	357	357	125	11,466	305	0	2,808	0.000	O O	0.077	119	119		126		
Condensing Htg Sys Rep Non-Cond Htg Sys Repl	90 4	0	87 4	3	0	0	-	-				245,996 7,850	0.0	0	0.0	0	0	122	11,192 274	305 0	0	2,733	-	-	-	-	-	1.40	129 69	102	
Electric Htg Sys Repl	2	2	0	0	0	0		- 2				7,050	0.0	0		162	162	0	0	0	0		0.000	- 0	0.053	81	- 81	0.75	- 08		
Heat Pump Repl	1	1	0	0	0	0	-	1				11,153	0.0	0		195	195	0	0	ő	Ö				0.127	195			-	-	
Other Htg Sys Repl	0	0	0	0	0	0	-	0				0	0.0	0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-		-	
							Number	of Meas	ıres Instal	led by Fi	el Type																				
	Total E	lectric	Gas F		Fuel				Gas	•	Fuel		Summer kW		Winter		Annual kWh	Pk-Day therms	Annual therms		uel Oil Other gallons Mbt		Summer kW		Vinter kW			Pk-Day therms	Annual therms		Fuel Oil Other gallons Mbtu
Water Heating	133	28	102	3	0	0	228	39	184	5	0	0 149,725	0.0		0.0		2,748		3,717	82	0	1,126			0.002			0.213	36		
Temp. Reduct.	0	0	0	0	0	0	0	0	0	0		0 0	0.0		0.0		0	0.0	0	0	0	0	-		-		-	-	-	-	
WH Wrap Pipe Insul.	0 128	0 26	0 99	0	0	0	0 128	0 26	0 99	0	0	0 0 2,331	0.0		0.0		0 1,096	0.0 0.9	0 325	0 11	0	0 18	0.000		0.000		- 42	0.01	- 3	- 4	
LF Showerhead	0	20	99	0	0	0	0	20	99	0	0	0 2,331	0.0		0.0		1,090	0.0	325	0	0	0	0.000		-		- 42	0.01		- 4	
Faucet Aerator	0	ō	0	ō	ō	0	ō	Ō	0	ō	0	0 0	0.0		0.0		ō	0.0	0		0	0	-		-		-	-	-	-	
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0	0	0	0	0 0	0.0		0.0		0	0.0	0	0	0						-				
Hi-Eff or Electric Wtr Htr Repl. Lighting	100 108	13	85	2	0	0	100 775	13 775	85	2	0	0 147,394 5,721	0.0		0.0 1.9		1,652 10,044	20.8	3,392	72		1,474			0.003		127 93		- 40	36	
Refrigerator/Freezer ³	39	39					44	44				20,679	2.8		2.6		22,765	-							0.067		584			-	
Refrigerator Removal	0	0					0	0				0	0.0		0.0		0	-	-	-		0	-		-		-	-	-	-	
Refrigerator Exchange	25	25					25	25				15,275	1.5		1.4		12,576	-	-	-		611	0.062		0.058		503	-	-	-	
Freezer Removal Freezer Exchange	0 19	0 19					0 19	0 19				0 5,404	0.0 1.3		0.0 1.2		0 10,189	-	-	-		0 284	0.066		0.062		- 536	-	-	-	
							10						1.0				10,100			l					0.002		000			1	
Total Non-Efficiency Measures Misc Ins,Attic Access/Ven	142 96											1,078,560 35,797										7,595									
Duct Sealing	84											24.827										296									
Duct Insulation	79											18,244										231									
Damming Material	47											2,604										55									
Htg. Sys. Tune & Clean	40 39											3,287 13,664										82 350									
Htg. Sys./WH Other Air Conditioning Work	0											13,004										350									
Water Heater Repair	16											1,717										107									
Refrigerator Coil Clean	0											0										0									
Waterbed Mattress Pad Programmable Tstat	0											0										0									
Unspecified Utility Meas	0											0										0									
CO Detector	133											9,431										71	1								
Smoke Detector	83											6,736										81									
Fuses Htg Sys Safety Check	0											0										0									
Htg Sys Ventilation	89											16,032										180									
Water Heater Ventilation	78											15,026										193									
Bathroom Ventilation	3											308										103									
Dryer Ventilation Kitchen Ventilation	89 7											9,885 1,232										111 176									
Other Exhaust Ventilation	0											1,232										0									
Asbestos Removal (Minor)	7											5,840										834									
Health/Safety Repairs	108 29											52,077 2,933										482 101									
Health/Safety Other Consumables	107											2,933 8,663										101									
General Repairs	120											141,828										1,182									
Meter Refrig (no action)	101											0										0	1								
Meter Freezer (no action)	21 142											641.076										4,521									
Support Transportation Allowance	142 94											641,976 13,173										4,521 140									
Landlord Contr Misc	0											.5,775										0									
Landlord Contr Furnace	0											0										0									
Landlord Contr DHW	0											0										0									
Client Contr (Any) Lead Safe Work	94											53,278										567									
Unspecifed/Other	0											03,276										0									

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

Dalhoff Associates, LLC

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$2,085,733

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$2,085,733

	Num	nber of I	Owelling	gs with I	Impact	ts	Numb	er of Dw	ellings with kWh Impacts				Billing A	Adjusted F	irst-Year S	avings					Averag	e Billing per Dw					and Savin	gs		
				,	Fuel		Seas		omingo mai krii impaoto	Spending on Materials	Sum		Electricity	inter	Annual	Pk-Day	Gas	Propane	Fuel Oil	Other	Spending on Materials	Sumn	E	lectricit Wir	ty		I Pk-Day	ias Annual	Propage	Fuel Oil Other
Measure	Total	Electric	Gas	Propane		Other	Cooling			& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms		gallons		& Labor (\$)		kWh	kW	kWh	kWh	therms	therms		gallons Mbtu
Total Efficiency Measures	159	159	152	4	0	0	159	159		1,219,359	28.4		17.0		88,622	402	39,528	1,050	0	0	7,669	0.179		0.107		557	2.64	260	262	
Total Shell & Htg. Sys. Repl	159	159	152	4		0		159		985,670	23.8	26,646	10.7	16,444	43,090	371			0		6,199	0.152	170		103			224		
Total Shell Measures Wall Insul	159 79	159 78	152 79	0			157 78	159		539,103 121,630	23.8 9.0	26,646 10.840	10.7	16,444	43,090 10,840	198	18,176 6,214	390	0	0	3,391 1,540	0.152	170 139	0.067	103			120 79		
Open Blown Ceiling Insul	110	108	105	4			108	1		56,048	8.3	9,967	0.0	282	10,249	68 45			0	0	510	0.113		0.183	282			40		
Cavity Fill Insul	37	33	37	0			33	0		24,496	1.7	2,011	0.0	0	2,011	22	1,993	0	0	ō	662	0.051	61	0.000	0	61	0.59	54	-	
Sloped Attic Insul Kneewall Insul	38	34	38 35	0	-	-	34 31	0		14,975	1.6	1,969	0.0	0	1,969	17	1,590 696	0	0	0	394	0.048	58	0.000	0			42		
Infil. Reduction	35 157	31 154	150	4		0	154	0		24,093 125,792	2.0	853 2,464	0.0 0.1	137	853 2,601	33			0	0	688 801	0.023	28 16	0.000	0 46			20 20		1 1
Found./Crawl. Insul	49	16	47	2	2 0		16	0		35,035	0.8	961	0.0	0	961	7	680	62	0	0	715	0.050		0.000	0		0.16	14		
Bandjoist Insul.	108	0	107	1	0	0	-	0		42,959	0.0	0	0.0	0	0	5			0		398	-	-	-	-	-	0.05	5	5	
Furnace Blower Fan	156	152	152	4	1 0	0	-	152		0	0.0	0	12.2	18,759	18,759	(1)					0	0.000		0.080				(0		
Exhaust Ventilation	109 129	109	104 125	3	3 0	0	109	109		94,075 446,568	-0.3 0.0	(2,420)	(1.8)	(2,733)	(5,153)	(7) 173			0	0	863 3,462	-0.003	(22)	(0.016)	(25) (47	(0.07)	(6 127	133	
Total Heating System Repl Condensing Htg Sys Rep	129	0	123	4				-		438,385	0.0	0	0.0	0	0	173			0	0	3,479		-	÷	<u> </u>		1.39	127		
Non-Cond Htg Sys Repl	3	0	3	0			-	-		8,183	0.0	0	0.0	0	0	3	279	0	0	0	2,728	-	-		-	-	1.01	93		
Electric Htg Sys Repl	0	0		0	-		-	0		0	0.0	0	0.0	0	0	0		0	0		0	-	-		-	-	-	-	-	
Heat Pump Repl Other Htg Sys Repl	0	0	0	0			-	0		0	0.0 0.0	0	0.0	0	0	0	0	0	0	0	0	-	- 1		- 1	- 1	1 :			
z ring dyo riopi	J				. 0		1			Ů	0.0		0.0							3									1	
					Fuel			of Measu	res Installed by Fuel Type Fuel		Summer		Winter		Annual	Pk-Day	Annual	Propane	Fuel Oil	Other	:	Summer		Winter		Annua	l Pk-Day	Annual	Propane	Fuel Oil Other
Materillestine	Total	Electric	Gas	Propane	e Oil		Total		Gas Propane Oil Othe		kW		kW		kWh	therms	therms	gallons	gallons	Mbtu	4 000	kW		kW		kWh	therms	therms		gallons Mbtu
Water Heating Temp. Reduct.	158 0	31	124 0	3	0 0		398 0	75 0	316 7 0 0 0 0	0 200,504	0.0		0.1		5,304	31.3	5,449	129	0	0	1,269	0.000		0.003		1/1	0.252	- 44	43	
WH Wrap	ō	ō	ō	0			0	0	0 0 0		0.0		0.0		0	0.0			ő	0	ŏ	-		-		-	-		-	
Pipe Insul.	141	25	114	2			141	25	114 2 0	0 2,770	0.0		0.0		1,053	1.2			0		20	0.000		0.000		42		4	4	
LF Showerhead Faucet Aerator	30 69	10 19	20 48	0			30 98	10 27	20 0 0 69 2 0	0 305 0 490	0.0		0.0		1,736 875	0.5 0.4	169 116		0	0	10	0.000		0.004		174 46		8	- 2	
Std-Eff Wtr Htr Repl.	09	0	0	0			0	0	0 0 0	0 490	0.0		0.0		0/3	0.0			0	0	ó	-		-		-	- 0.01		- 2	
Hi-Eff or Electric Wtr Htr Repl.	129	13	113	3	3 0		129	13	113 3 0	0 196,938	0.0		0.0		1,642	29.2		118	ō	ō	1,527	0.000		0.003		126		42	39	
Lighting	134	134					1,109	1,109		7,792			4.0		20,444	-	-	-	-	-	58	0.016		0.030		153			-	
Refrigerator/Freezer ³ Refrigerator Removal	36 0	36					39	39		25,393	2.4 0.0		2.3 0.0		19,784	-	-	-		-	705	0.068		0.063		550	-		-	
Refrigerator Exchange	31	31					32	32		22,651	2.0		1.8		16,046	1	- :	1			731	0.064		0.060		- 518			1	
Freezer Removal	0	0					0	0		0	0.0		0.0		0	-	-	-	-	-	0	-		-		-	-	-	-	
Freezer Exchange	7	7					7	7		2,742	0.5		0.4		3,738	-	-	-	-	-	392	0.066		0.061		534	-	-	-	
Total Non-Efficiency Measures	159									866,374											5,449									
Misc Ins,Attic Access/Ven	140									28,628											204									
Duct Sealing Duct Insulation	130 103									19,919 6,451											153 63									
Damming Material	63									1,963											31									
Htg. Sys. Tune & Clean	21									2,624											125									
Htg. Sys./WH Other Air Conditioning Work	15 0									16,070 0											1,071									
Water Heater Repair	4									505											126									
Refrigerator Coil Clean	0									0											0									
Waterbed Mattress Pad Programmable Tstat	0 53									0 4.985											0 94									
Unspecified Utility Meas	0									4,985											0									
CO Detector	155									11,672											75 52									
Smoke Detector Fuses	136 0									7,069 0											52 0									
Htg Sys Safety Check	0									0											0									
Htg Sys Ventilation	122									16,764											137									
Water Heater Ventilation	98									11,676											119									
Bathroom Ventilation Dryer Ventilation	44 130									9,798 11,656											223 90									
Kitchen Ventilation	11									1,866											170									
Other Exhaust Ventilation	38									2,171											57									
Asbestos Removal (Minor) Health/Safety Repairs	0 86									0 19,563											0 227									
Health/Safety Other	2									19,563											89									
Consumables	55									1,351											89 25									
General Repairs	142									65,007 0	l										458									
Meter Refrig (no action) Meter Freezer (no action)	126 47									0											0									
Support	159									593,681											3,734									
Transportation Allowance	72									8,478											118									
Landlord Contr Misc Landlord Contr Furnace	0									0											0									
Landlord Contr Purnace	0									0											0									
Client Contr (Any)	0									0											0									
Lead Safe Work Unspecifed/Other	84 0									24,297											289									
onspecified/Offiel	U									U	i .										U									

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

Dalhoff Associates, LLC

Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$365,540

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$365,540

							1						1	ı			Rilling A	diustad E	irst-Year S	avinge				1	Avers	a Rillina			t Voor (nd Saving	10			
	Nu	mber o	f Dwelli	ings wi	ith Impa	acts		Number	of Dwe	llings w	ith kWl	n Impacts					_	-	iist-rear 5	-							velling F	Receivir	ng Mea						
						uel		Season					N	ending on Naterials	Sum	mer	Electricity Win	nter	Annual	Pk-Day	Gas Annual	Propane	Fuel Oil	Other	Spending on Materials	Sumr	ner	Electricit Win	iter		Pk-Day	as Annual		Fuel Oil Othe	
Measure								oling He					&	Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	gallons			& Labor (\$)	kW	kWh	kW	kWh		therms	therms	Ĭ	gallons Mbtu	<u>J</u>
Total Efficiency Measures	25			21	2		0	25	25					174,440	7.3		6.0		20,028	76		628		0	6,978			0.239			3.62	330			
Total Shell & Htg. Sys. Repl Total Shell Measures	25 25	2		21	2	0	0	25 25	25 25					137,625 92,950	7.0 7.0	8,266 8,266	5.5 5.5	7,986 7,986	16,252 16,252		6,172 3,990	622 374	0	0	5,505 3,718	0.280	331 331	0.221	319 319			294 190			
Wall Insul.	9		9	8	0	0	0	9	1					16,767	1.6	1,919	1.1	1,608	3,527	10	886	0	0	0	1,863	0.177	213	1.114	1,608	392	1.29	111	-		-
Open Blown Ceiling Insul Cavity Fill Insul	24	2		20	_	0	0	24	2					19,730 4,563	2.1 1.0	2,525 1,150	1.4 1.1	2,008 1,608	4,533 2,757	7	564 801	119	0		822 570	0.087 0.119	105 144	0.695 1.113	1,004 1,608		0.33 1.33	28 114			
Sloped Attic Insul	8 11	1		7 11	0	0	0	8 11	0					4,563	0.9	1,150	0.0	1,608	1,095	9	542	0	0		570 375	0.119	100	0.000	1,608			114 49		1 1	
Kneewall Insul	9		9	9	0	0	0	9	0					2,727	0.2	299	0.0	0	299	2	167	0	0	0	303	0.028	33	0.000	0	33	0.22	19			
Infil. Reduction Found./Crawl. Insul	24 17	2		20 14	2	0	0	24 10	2					28,893 7.319	0.4	540 937	0.3 0.2	493 246	1,033 1,183	6	518 305	81 139	0		1,204 431	0.019	22 94	0.171 0.170	247 246		0.30 0.25	26 22			
Bandjoist Insul.	17	1		9	2	0	0	- 10	1					1,192	0.8	937		246 51	1,183	3	297	139	0		431 99	0.078	94	0.170	246 51		0.25	33			
Furnace Blower Fan ¹	23	2		21	2	0	0		23					0	0.0	0		2,172	2,172	(0)		(2)	0		0	0.000	0	0.065	94			(1			
Exhaust Ventilation	9		•	8	1	0	0	9	9					7,632	0.0	(200)		(200)	(399)			(10)	0		848	-0.003	(22)	(0.015)	(22)	(44		(9			
Total Heating System Repl	12		•	11 11	1	0	0	-	0					44,675 44,675	0.0	0	0.0	0	0	25 25	2,182 2,182	248 248	0		3,723 3,723	-	-	-	-	-	2.30	198 198			_
Condensing Htg Sys Rep Non-Cond Htg Sys Repl	12 0			0	ó	0	0		-					44,675	0.0	0	0.0	0	0	25		246	0		3,723		- 1	- 1			2.30	- 190	- 240		
Electric Htg Sys Repl	0			0		0	0	-	0					0	0.0	0		0	0	0	0	0	0		0	-	-	-	-	-	-	-	-		
Heat Pump Repl Other Htg Sys Repl	0			0	0	0	0	-	0					0	0.0	0	0.0	0	0	0	0	0	0		0	-	-	-	-	-	-	-	-		
Onioi Hig dys Nepi	U			U	U	U		-						U	0.0	U	0.0	U	U	"	U	0	U	J	U		-	<u> </u>			1	-	<u> </u>		_
					E.	uel	N	umber of	Measure	es Installe	ed by Fu	el Type Fuel			Summer		Winter		Annual	Pk-Day	Annual	Propane	Fuel Oil	Other		Summer		Winter		Annual	Pk-Day	Annual	Dronene	Fuel Oil Othe	or
	Total	Electri	c Gas	s Prop		uei Dil Otl	her T	otal Ele	ectric	Gas P	ropane		ther		kW		kW		kWh	therms	therms		gallons			kW		kW		kWh	therms	therms	gallons	gallons Mbtu	
Water Heating	24		8 1	15			0	44	15	28	1	0	0	32,160	0.0		0.0		925	4.3	756	6	0	0	1,340	0.000		0.002			0.288	50			
Temp. Reduct. WH Wrap	0		0 0	0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0	0	0	0	0	0	-		-		-	-	-	-	1 1	
Pipe Insul.	18			11	1	ő	0	18	6	11	1	Ö	0	350	0.0		0.0		255	0.2	56	6	0		19	0.000		0.000		43	0.01	5	- 6		
LF Showerhead	3			3	0	0	0	3	0	3	0	0	0	30	0.0		0.0		0	0.1	37	0	0		10	-					0.04	12			
Faucet Aerator Std-Eff Wtr Htr Repl.	5			3	0	0	0	8	5 0	3 0	0	0	0	30 0	0.0		0.0		161 0	0.0	7	0	0		6	0.000		0.002		80	0.01	2	-	1 1	
Hi-Eff or Electric Wtr Htr Repl.	15			11	ō	ő	0	15	4	11	ō	Ö	0	31,750	0.0		0.0		509	4.0		0	0		2,117	0.000		0.003		127	0.37	60	-	1 1	
Lighting	17	1						96	96					672	0.1		0.3		1,347	-	-	-	-	-	40	0.008		0.015		79		-	-		
Refrigerator/Freezer³ Refrigerator Removal	3		3					3	3					3,983	0.2		0.2		1,504	-	-	-	-	-	1,328	0.062		0.058		501	-	-	-		_
Refrigerator Exchange	3		3					3	3					3,983	0.0		0.0		1,504	1		-		- 1	1,328	0.062		0.058		- 501	-		-	1 1	
Freezer Removal	0		0					0	0					0	0.0		0.0		0	-	-	-	-	-	0	-		-		-	-	-	-		
Freezer Exchange	0		0					0	0					0	0.0		0.0		0	-		-	-	-	0			-		-	-	-	-		_
Total Non-Efficiency Measures Misc Ins,Attic Access/Ven	25 24													191,100 7,544											7,644 314										
Duct Sealing	1													850											850										
Duct Insulation	0													0											0										
Damming Material Htg. Sys. Tune & Clear	14													780 1,935											56 645										
Htg. Sys./WH Other	7													4,775											682										
Air Conditioning Work	0													0											0										
Water Heater Repair Refrigerator Coil Clean	0													0											0										
Waterbed Mattress Pad	0													0											0										
Programmable Tstat	0													0											0										
Unspecified Utility Meas CO Detector	21													0 874											42										
Smoke Detector	13													599											46										
Fuses	0													0											0										
Htg Sys Safety Check Htg Sys Ventilation	14													4,550											325										
Water Heater Ventilation	11													2,120											193										
Bathroom Ventilation Dryer Ventilation	2													1,250 865											625 173										
Kitchen Ventilation	0													0											0										
Other Exhaust Ventilation	1													27											27										
Asbestos Removal (Minor) Health/Safety Repairs	0 20													0 25,703											0 1,285										
Health/Safety Other	1													41											41										
Consumables General Repairs	0 24													0 34,054											0 1,419										
Meter Refrig (no action)	20													34,054											1,419										
Meter Freezer (no action)	13													0											Ö										
Support Transportation Allowance	25 0													100,343											4,014										
Landlord Contr Misc	0													0											0										
Landlord Contr Furnace	0													Ó											0										
Landlord Contr DHW Client Contr (Any)	0													0											0										
Lead Safe Work	12													4,790											399										
Unspecifed/Other	0													0											0										

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

The total number of disentings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Dalhoff Associates, LLC

Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

impacts from communications are required by As-inches cut. 2. The winter impacts exceed summer occasion required association measure replacements of swellings was electric near.

"The field in market of idvallions may exceed the number of measures included in cases where the utility notability funds refliciencing measure replacements." The procreation of expreditions for each application of measures included in a cases where the utility notability funds refliciencing measure replacements. The procreation of expreditions for each application of measures included in a case where the utility to addition measures included.

Total Reported Labor, Materials and Utility Admin Expenditures: \$1,387,241

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$1,387,241

							1						ı	ı		Rilling A	Adjusted F	irst-Year S	avinge				1	Averse	ıe Billina			Year Co	•	nd Saving	,, .		
	Nu	ımber	of Dwel	lings v	with Imp	pacts		Numbe	r of Dw	ellings v	ith kWh	Impacts				_	-	iist-rear 5	_							elling R	eceivin	g Meas		_			
						Fuel		Seaso					Spending on Materials	Sun	nmer		inter	Annual	Pk-Day	Gas Annual	Propane	Fuel Oil	Other	Spending on Materials	Sumn	ner	lectricity Wint	er .			Annual		Fuel Oil Other
Measure	Total	Elect	ric Ga	s Pro	opane	Oil O	ther (Cooling H	leating				& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	gallons	gallons	Mbtu	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	gallons	gallons Mbtu
Total Efficiency Measures	97		97	75	20	0	0	97	97				717,057			11.0		52,450		19,469		0	0	7,392			0.113		541		260		
Total Shell & Htg. Sys. Repl Total Shell Measures	97			75 75	20	0	0	95 95	97 97				625,549 473,333		18,993 18,993	8.4 8.4	13,067 13,067	32,060 32,060	189 109		6,210 3,888	0	0	6,449 4,880	0.177 0.177	200 200	0.086	135 135	331 331	2.52 1.45	235 135		
Wall Insul.	54		50	42	12	0	0	50	0				106,668	5.9	7,092	0.0	0	7,092	40	3,688	1,185	0	0	1,975	0.118	142	0.000	0	142	0.94	88	99	
Open Blown Ceiling Insul Cavity Fill Insul	81 27			62 20	17 7	0	0	77 22	2				77,224 30,369		5,842 1,702	1.2 0.0	1,876	7,718 1,702	19 15	1,796 1,356	1,104 389	0		953 1,125	0.063 0.064		0.600	938 0	100 77	0.31 0.73	29 68		
Sloped Attic Insul	38			31	7	0	0	33	0				19,034		2,612		0	2,612	16	1,491	363	0		501	0.064		0.000	0	79	0.73	48	52	
Kneewall Insul	38			29	9	0	0	35	0				19,969		702	0.0	0	702	3	276	148	0		526	0.017		0.000	0	20	0.10	10		
Infil. Reduction Found./Crawl. Insul	96 45			74 36	20 9	0	0	91 18	2				122,521 35.755	1.2	1,469 1.107	0.1 0.0	210 0	1,678 1,107	14		456 252	0		1,276 795	0.013 0.051		0.067	105 0	18 62	0.18 0.16	17 15	23	
Bandjoist Insul.	25		0	13	12	0	0	-	0				4,610		0	0.0	ō	0	1	73	99	Ō	0	184	-	-	-	-	-	0.06	6	8	
Furnace Blower Fan ¹	95			75	20	0	0	-	95				0	0.0	0		12,827	12,827	(0)			0		0	0.000		0.086	135	135	(0.01)	(1)	,	
Exhaust Ventilation Total Heating System Repl	69 74			52 60	15	0	0	69	69				57,184 152,216		(1,533)	(1.2)	(1,846)	(3,378)			(96)	0		829 2.057	-0.003	(22)	(0.017)	(27)	(49)	(0.06)	(6) 125		
Condensing Htg Sys Rep	69			56	13	0	0	-	-				142,773	0.0	0	0.0	0	0	78	7,223	2,207	0	-	2,069	-	-		-	-	1.38	129	170	
Non-Cond Htg Sys Repl	5 0		0	4 0	1 0	0	0		- 0				9,443	0.0	0	0.0	0	0	3		115 0	0		1,889	-	-	-	-	-	0.72	67	115	: :
Electric Htg Sys Repl Heat Pump Repl	0			0	0	0	0		0				0	0.0	0		0	0	0		0	0		0		-	-						
Other Htg Sys Repl	0		0	0	0	0	0	-	0				0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-		-	
								Number o	of Measu	res Install	ed by Fue	el Type																					
						Fuel					-	Fuel		Summer		Winter		Annual	Pk-Day		Propane I				Summer	,	Winter			Pk-Day	Annual		Fuel Oil Other
Water Heating	Total 86	Elect	ric Ga 22	s Pro	opane 8	Oil C	Other 0	Total E	lectric 32	Gas F	ropane 12	Oil Oth	er 0 75,356	kW		kW		kWh 2,491	therms 10.7	therms 1,828	gallons 281	gallons 0	Mbtu 0	876	kW 0.000		kW 0.002		kWh 113	0.192	therms 33		gallons Mbtu
Temp. Reduct.	0		0	0	0	0	0	0	0	0	0	0	0 0	0.0		0.0		0	0.0	0	0	0	0	0	-				-	-	-	-	
WH Wrap Pipe Insul.	0 52			0 34	0 4	0	0	0 52	0 14	0 34	0 4	0	0 0 353	0.0		0.0		0 589	0.0	0 112	0 14	0	0	0	0.000		0.000		- 42	0.01	- 3	- 4	
LF Showerhead	5		2	3	0	0	0	5	2	3	0	0	0 333			0.0		350	0.3	24	0	0		6	0.000		0.004		175	0.01	8	- "	
Faucet Aerator	14		5	7	2	0	0	16	5	9	2	0	0 40	0.0		0.0		162	0.0	14	3	0	0	3	0.000		0.001		32	0.01	2	2	
Std-Eff Wtr Htr Repl. Hi-Eff or Electric Wtr Htr Repl.	0 57		0 11	0 40	0	0	0	0 57	0 11	0 40	0	0	0 74.932	0.0 0.0		0.0		1.390	0.0 10.3		0 263	0	0	0 1,315	0.000		0.003		- 126	0.26	- 42	- 44	
Lighting	53		53	40			-	516	516	70			1,304			1.3		6,737	-	-	-	-	-	25	0.013		0.025		127	-		-	
Refrigerator/Freezer ³	19		19					22	22				14,848			1.3		11,162	-	-	-	-	-	781	0.072		0.068		587	-		-	
Refrigerator Removal Refrigerator Exchange	0 18		0 18					0 18	0 18				0 12,573	0.0		0.0 1.0		9,026			-		-	0 699	0.062		0.058		- 501	-	-	-	1 1
Freezer Removal	0		0					0	0				0	0.0		0.0		0			-	-		0	-		-		-	-		-	
Freezer Exchange	4		4					4	4				2,275	0.3		0.2		2,136	-	-	-	-	-	569	0.066		0.061		534	-	-	-	
Total Non-Efficiency Measures	97												670,184											6,909									
Misc Ins,Attic Access/Ven	86 36												51,672 10,277											601 285									
Duct Insulation	54												9,414											174									
Damming Material Htg. Sys. Tune & Clear	53 26												4,909 2,861											93 110									
Htg. Sys./WH Other	10												4,151											415									
Air Conditioning Work	0												0											0									
Water Heater Repair Refrigerator Coil Clean	9												434 0											48 0									
Waterbed Mattress Pad	0												0											0									
Programmable Tstat	0												0											0									
Unspecified Utility Meas CO Detector	82												4,613	 										56									
Smoke Detector	42												1,874											45									
Fuses Htg Sys Safety Check	0 45												0 12,712											0 282									
Htg Sys Salety Check	74												12,353											167									
Water Heater Ventilation	44												4,709											107									
Bathroom Ventilation Dryer Ventilation	22 49												4,660 7.139											212 146									
Kitchen Ventilation	6												1,154											192									
Other Exhaust Ventilation	0												0											0									
Asbestos Removal (Minor) Health/Safety Repairs	0 78												51,003											654									
Health/Safety Other	3												219											73									
Consumables General Repairs	0 92												75,764										T	0 824									
Meter Refrig (no action)	69												0											0									
Meter Freezer (no action)	33 97												389.089	1										0									
Support Transportation Allowance	97												389,089 n											4,011 0									
Landlord Contr Misc	0												ő											0									
Landlord Contr Furnace Landlord Contr DHW	0												0											0									
Landlord Contr DHW Client Contr (Any)	0												0											0									
Lead Safe Work	63												21,177											336									
Unspecifed/Other	0												0											0									

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed by the percentage of expenditures for each appliance is totaled to get the total number of measures installed by the percentage of expenditures for each appliance is totaled to get the total number of measures installed by the percentage of expenditures for each appliance is totaled to get the total number of measures installed to the percentage of expenditures for each appliance is totaled to get the total number of measures installed to the percentage of expenditures for each appliance is totaled to get the total number of measures installed to the percentage of expenditures for each appliance is totaled to get the total number of measures installed to the percentage of expenditures for each appliance is totaled to get the total number of measures installed to the percentage of expenditures for each appliance is totaled to get the total number of measures installed to the percentage of expenditures for each appliance is totaled to get the total number of measures installed to the percentage of expenditures for each appliance is totaled to get the total number of measures installed to get the percentage of expenditures for each application and the per

Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

impacts from communuous constants trass required by ASHINALE O.Z. I no winter impacts exceed summer decause mees and on include nearing season impacts for ownings with electric heat.

The total number of dwellings may exceed the number of measures included in cases where the utility manifest of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$535,116

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$535,116

						1				1	l		Billina A	djusted Fi	irst-Year S	avings				1	Averag	e Billina	Adjusted			sts and	l Saving	s		
	Num	ber of D	wellings	with Imp	acts	Numb	er of Dw	ellings with kWh	Impacts				_	.,			_				_		elling Rec	eiving	g Measu		_			
	T.4.1	- 1	0		uel	Seas				Spending on Materials	Sum		Electricity Wir		Annual	Pk-Day	Gas Annual			Other	Spending on Materials	Summ	ner	Winte	er A	nnual P		Annual		Fuel Oil Other
Measure						er Cooling				& Labor (\$)	kW	KVVN		kWh	kWh	therms			gallons		& Labor (\$)				kWh i	kWh ti		therms		gallons Mbtu
Total Efficiency Measures	43	43	28	9		0 43				316,831	10.5		11.5		40,890	61			0		7,368	0.245		267			2.18	209	205	
Total Shell & Htg. Sys. Repl Total Shell Measures	43 43	43 43	28	9	0	0 43	43 43			266,438 153,557	9.2 9.2	10,480	9.5 9.4	14,520	25,000 24,878	58 28		1,702 877	0	0	6,196 3,571	0.215	244 0. 244 0.		338 335	581 579	2.06 1.01	188 93	189 97	
Wall Insul.	20	20	12	5	0	0 20	3			40,345	2.9	3,485	2.9	4,384	7,870	10	896	261	0	0	2,017	0.144	174 0.	956	1,461	393	0.82	75	52	
Open Blown Ceiling Insul	39	39	25	9		0 39	5			34,507	3.5	4,269	2.7	4,098	8,367	8		226	0	0	885	0.091		536	820	215	0.32	29	25	
Cavity Fill Insul Sloped Attic Insul	8 17	16	5 12	3		0 7 0 16	0			7,807 7,426	0.5 1.2	556 1,473	0.0 1.0	1,469	556 2,941	3 4	235 407	169 111	0	0	976 437	0.066		000 480	0 734	79 184	0.52 0.37	47 34	56 37	1 1
Kneewall Insul	11	10	8	3	0	0 10	0			3,273	0.4	434	0.0	0	434	1	135	47	0	0	298	0.036	43 0.	000	0	43	0.18	17	16	
Infil. Reduction	42	42	27	9		0 42	6			25,408	0.7	869	0.5	819	1,688	3	296		0	0	605	0.017		089	136	40	0.12	11	10	
Found./Crawl. Insul Bandioist Insul	4	2	2	1		0 2	1			2,804 948	0.1 0.0	152 0	0.2 0.1	308 112	460 112	0	9	9	0	0	701 316	0.063		202 073	308 112	230 112	0.05	5 4	9	
Furnace Blower Fan ¹	37	37	28	9	0	0 -	37			0	0.0	0	3.0	4,592	4,592	(0)) (10)	(4)	0	0	0	0.000	0 0.	081	124		(0.00)	(0)	(0)	
Exhaust Ventilation	34	34	23	7	0	0 34	34			31,040	-0.1	(758)	(0.9)	(1,384)	(2,142)	(1)			0	0	913	-0.003	(22) (0.		(41)	(63)	(0.05)	(5)	(5)	
Total Heating System Repl	34	1	25 25	8 8	0	0 -	1			112,881	0.0	0	0.1	123	123	29			0	0	3,320	0.000	0 0.	080	123	123	1.17	107 107	103	· ·
Condensing Htg Sys Rep Non-Cond Htg Sys Repl	33 0	0	0	0	•	0 -				107,206	0.0	0	0.0	0	0	29 0	2,669 0	825 0	0	0	3,249 0			-	-	-	1.17	-	-	
Electric Htg Sys Repl	0	0	0	0		0 -	0			0	0.0	0	0.0	0	0	0			0	0	0	-		-	-	-	-	-	-	
Heat Pump Repl Other Htg Sys Repl	1	1	0	0	0	0 -	1			5,675	0.0	0	0.1	123	123	0	0	0	0	0	5,675	0.000	0 0.	080	123	123	-	-	-	
outer rity dys nepr	J	U	U	U	U	-				0	0.0	0	0.0	U	U	-	U	0	U	U	U	-	-	-	-	-	-	-	-	
				F	uel	Numbe	of Measu	res Installed by Fue	l Typ€ Fuel		Summer		Winter		Annual	Pk-Day	Annual	Propane I	Fuel Oil	Other		Summer	Wir	nter	A	nnual P	k-Dav	Annual	Propane	Fuel Oil Other
Water Handle	Total	Electric	Gas Pr		Oil Oth	er Total	Electric 47	Gas Propane	Oil Other	40.000	kW		kW		kWh	therms	therms	gallons	gallons	Mbtu		kW	k!	w		kWh ti	herms	therms	gallons	gallons Mbtu
Water Heating Temp. Reduct	42	20	0	0		0 95	47	37 11	0 0	40,632	0.0		0.1		4,147	3.4 0.0	593	143	0	0	967	0.000		004		207 113	-	35	29	- : : :
WH Wrap	o O	o o	ō	Ö		0 0	Ö	0 0	0 0	ő	0.0		0.0		0	0.0	0	ő	0	ő	0			-		-	-	-	-	
Pipe Insul.	41	20 9	16 2	5		0 41 0 15	20	16 5 2 2	0 0	810	0.0		0.0		848	0.1			0	0	20	0.000		000		42	0.01	3	3 7	
LF Showerhead Faucet Aerator	13 6	3	3	0		0 15 0 6	11 3	2 2 3 0	0 0	150 30	0.0 0.0		0.0		1,564 97	0.0	13 4		0	0	12 5	0.000		004 001		174 32	0.02	1	- '	1 1
Std-Eff Wtr Htr Repl.	0	0	0	0		0 0	0	0 0	0 0	0	0.0		0.0		0	0.0	0	0	0	0	0	-		-		-	-	- '	-	
Hi-Eff or Electric Wtr Htr Repl.	32 37	12 37	16	4	0	0 32 523	12 523	16 4	0 0	39,642 3,685	0.0		0.0 1.4		1,526 7,111	3.3	534	115	0	0	1,239 100	0.000		003 037		127 192	0.20	33	29	
Lighting Refrigerator/Freezer ³	9	9				9	9			6,077	0.7		0.5		4,632						675	0.020		059		515	-			
Refrigerator Removal	0	0				0	0			0	0.0		0.0		0	-	-	-	-	-	0	-		-		-	-	-	-	
Refrigerator Exchange Freezer Removal	6	6				6	6 0			4,698	0.4		0.3		3,009	-	-	-	-	-	783	0.062	0.	058		501	-	-	-	
Freezer Exchange	0	0 3				0	3			0 1,379	0.0		0.0		0 1,623	- 1					460	0.067	0.	- 062		541	-	-		1 1
Total Non-Efficiency Measures	43									218,284											5,076									
Misc Ins,Attic Access/Ven	42									12,329											294									
Duct Sealing Duct Insulation	6 30									600 2,457											100 82									
Duct Insulation Damming Material	30 8									187											23									
Htg. Sys. Tune & Clean	5									775											155									
Htg. Sys./WH Other	5 0									3,864 0											773									
Air Conditioning Work Water Heater Repair	9									470											52									
Refrigerator Coil Clean	Ō									0											0									
Waterbed Mattress Pad Programmable Tstat	0									0											0									
Unspecified Utility Meas	0									0											0									
CO Detector	43									3,712											86									
Smoke Detector Fuses	34 0									2,415											71 0									
Htg Sys Safety Check	0									0											0									
Htg Sys Ventilation	32									4,718											147									
Water Heater Ventilation Bathroom Ventilation	19 10									3,492 954											184 95									
Dryer Ventilation	27									2,195											81									
Kitchen Ventilation	1 29									245 1,481											245 51									
Other Exhaust Ventilatior Asbestos Removal (Minor)	29 0									1,481											51 0									
Health/Safety Repairs	28									19,207											686									
Health/Safety Other	1									20											20									
Consumables General Repairs	0 38									13,932											0 367									
Meter Refrig (no action)	36									0											0									
Meter Freezer (no action) Support	16 43									144,335											0 3,357									
Transportation Allowance	43 0									144,335											3,357 N									
Landlord Contr Misc	Ō									ő											Ö									
Landlord Contr Furnace	0									0											0									
Landlord Contr DHW Client Contr (Anv)	0									0											0									
Lead Safe Work	13									898											69									
Unspecifed/Other	0									0											0									

Dalhoff Associates, LLC

Estimates are based upon reduced usage of the furnace due to shell improvements

Impacts from continuous exhaust fans required by ASHPAE 02. The winter impacts exceed summer because these also include healing season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$1,248,263

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$1,248,263

																			1				wateriai Ex	•	Ų 1,2 10,2 l		
	Number of F	Owellings with	h Impacte		Numbor	of Dwallin	nae with	kWh Impacts				Billing A	djusted F	irst-Year S	avings				Avera		Adjusted elling Rec			s and Savir	igs		
	Number of L	Jweilings with	iii iiiipacis	• '	Number	oi Dweiiii	iys with	KWII IIIIpacis	Spending on		E	Electricity				Gas			Spending on	per Bii		ctricity		1 .	Gas	1	
Measure	Total Electric	Gas Propa	Fuel ane Oil	Other Co	Season oling He	ating			Materials & Labor (\$)	Sun kW	nmer kWh	Wir kW	nter kWh	Annual kWh	Pk-Day therms	Annual therms		Fuel Oil Other		Sumn kW		Winter W k	r Ann kWh kW	ual Pk-Day /h therms	Annual therms		Fuel Oil Other gallons Mbtu
Total Efficiency Measures		•																	1.7							Ť	
	92 92		8 0		92	92			713,279	17.8		30.6		93,551				0	.,,			.333		2.13	22		-
Total Shell & Htg. Sys. Repl Total Shell Measures	92 92 92 92	79 79	8 0	-	89 89	92 92			590,223 427,773	14.4 14.4	15,845 15,845	26.2 25.9	43,294 42,846	59,139 58,691	158 116	15,560 11,461	3,051 2,095	0						343 2.00 338 1.47	19 14		
Wall Insul.	70 60	59	7 0	0	60	4			187,537	6.0	7,222	5.8	9,526	16,749	40	3,905	713		0 2,679					279 0.67	6		
Open Blown Ceiling Insul	88 74	77	7 0		74	4			47,692	5.0	5,974	6.5	10,772	16,745	44	4,350	693	0	542	0.067	81 1.	.630 2	2,693 2	226 0.57	5	6 99	
Cavity Fill Insul	32 26 51 46	26 44	4 0 5 0		25 46	2			25,162	0.5 1.5	618	2.0 0.9	3,259	3,877 3,291	5 15	538 1,464	184 284	0	786					72 0.34	2		
Sloped Attic Insul Kneewall Insul	27 24	22	4 0		24	1			30,200 23,847	0.4	1,778 432	0.9	1,513 87	520	4	355	89	-	883			.053		22 0.16	3:	6 22	
Infil. Reduction	92 76	79	8 0		76	5			39,154	0.9	1,031	0.7	1,120	2,151	8	790	91	ő	426	0.011	14 0.	.136	224	28 0.10		0 11	
Found./Crawl. Insul	35 11	28	5 0		11	2			11,338	0.5	569	0.8	1,379	1,948	2	229	42	0	324			417		0.08		8 8	
Bandjoist Insul. Furnace Blower Fan ¹	32 1 87 87	27 79	4 0 8 0		-	1 87			4,285 0	0.0	0	0.1 10.6	244 17,508	244 17,508	1 (0)	130 (44)		0	134	0.000				244 0.05 201 (0.01)		5 6 1) (1	
Exhaust Ventilation	80 80	70	5 0	0	80	80			58,558	-0.2	(1,779)		(2,562)	(4,341)	(3)			0	732		(22) (0.			(54) (0.04)		4) (4	
Total Heating System Repl	62 3	52	7 0	Ü		3			162,450	0.0	0	0.3	448	448	42	4,099	956	0	2,620	0.000	0 0.			0.80	7	9 137	
Condensing Htg Sys Rep	58 0	52	6 0	0	-	-			150,463 5,040	0.0	0	0.0	0	0	42	4,099	761	0	0 2,594 0 2,520	-	-	-		0.80	7	9 127	
Non-Cond Htg Sys Repl Electric Htg Sys Repl	2 0 3 3		2 0 0		-	3			6,947	0.0	0	0.0	0 448	0 448	0	0	195 0	0			0 0.	.090	149 1	149 -	- :	9/	
Heat Pump Repl	0 0	0	0 0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0		-					-	-	
Other Htg Sys Repl	0 0	0	0 0	0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	-	-			-	-	-	
				N	umber of	Measures	nstalled b	y Fuel Type																			
	Total Electric	Gas Propa	Fuel ane Oil	Other T	otal Ele	ectric Ga	s Prop	Fuel ane Oil Ot	er	Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms	Propane gallons	Fuel Oil Other gallons Mbt		Summer kW		nter :W		ual Pk-Day /h therms	Annual therms		Fuel Oil Other gallons Mbtu
Water Heating	92 24	66	2 0	0	321	73 2	240	8 0	0 93,110	0.0		0.1		5,061	10.7	1,929	55	0		0.000		.004		211 0.163	2	9 28	
Temp. Reduct. WH Wrap	0 0	0	0 0	0	0	0	0	0 0	0 0	0.0		0.0		0	0.0	0	0	0	0	-		-	-	-	-	-	
Pipe Insul.	91 24		2 0		91		65	2 0	0 389	0.0		0.0		1,016	0.4	134	4	0	0 4	0.000	0.	.000	-	42 0.01		2 2	
LF Showerhead	42 12	29	1 0		42	12	29	1 0	0 125	0.0		0.0		2,078	0.5	147	5	0	3	0.000	0.	.004		173 0.02		5 5	
Faucet Aerator Std-Eff Wtr Htr Repl.	73 18 0 0		2 0		114 0	29 0	82	3 0	0 60	0.0		0.0		944	0.3	81 0	3	0	1	0.000	0.	.001		52 0.00		2 2	
Hi-Eff or Electric Wtr Htr Repl.	74 8	64	2 0		74		64	2 0	0 92,536	0.0		0.0		1,022	9.6	1,568	42	0	1,250	0.000	0.	.003		0.15	2	4 21	
Lighting	83 83				833	833			4,375	1.3		2.3		11,970	-	-	-		53			.028		- 144		-	
Refrigerator/Freezer ³ Refrigerator Removal	29 29 0 0				34 0	34 0			25,570	2.1 0.0		2.0 0.0		17,382	-	-	-		882	0.074	0.	.069		599 -	-	-	
Refrigerator Exchange	25 25				25	25			21,868	1.5		1.4		12,576	- 1				875	0.062	0.	.058	- 5	503 -	- :		: :
Freezer Removal	1 1				1	1			25	0.1		0.1		534	-	-	-		25	0.066		.061		- 534	-	-	
Freezer Exchange	8 8				8	8			3,677	0.5		0.5		4,272	-		-		460	0.066	0.	.061				-	
Total Non-Efficiency Measures Misc Ins,Attic Access/Ven	92 91								534,984 14,655										5,815								
Duct Sealing	0								14,033										0								
Duct Insulation	0								0										0								
Damming Material Htg. Sys. Tune & Clean	67 32								4,026 1,590										60 50								
Htg. Sys./WH Other	52								19,457										374								
Air Conditioning Work	0								0										0								
Water Heater Repair Refrigerator Coil Clean	4 0								541 0										135								
Waterbed Mattress Pad	0								0										0								
Programmable Tstat	0								0										0								
Unspecified Utility Meas CO Detector	92								8,185										0	1							
Smoke Detector	91								6,893										89 76								
Fuses	0								0										0								
Htg Sys Safety Check Htg Sys Ventilation	86 6								5,292 2,137										62 356								
Water Heater Ventilation	0								0										0								
Bathroom Ventilation Dryer Ventilation	27 49								5,569 5,461										206 111								
Kitchen Ventilation	49 5								785										157								
Other Exhaust Ventilation	0								0										0								
Asbestos Removal (Minor) Health/Safety Repairs	0 37								10.077										0								
Health/Safety Other	0								12,277 0										332 0								
Consumables	92								4,042										44								
General Repairs Meter Refrig (no action)	90								50,946	 									566	ł							
Meter Freezer (no action)	15								ō										0								
Support	92								359,267										3,905								
Transportation Allowance Landlord Contr Misc	0								0										0								
Landlord Contr Furnace	0								0										0								
Landlord Contr DHW	0								0										0								
Client Contr (Any) Lead Safe Work	0 87								33,862										389	4							
Unspecifed/Other	0								0										0								

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

The total number of dwellings ma Dalhoff Associates, LLC

Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed

Total Reported Labor, Materials and Utility Admin Expenditures: \$690,985

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$690,985

	Numb	er of D	welling	s with	Impac	ts	Num	ber of D	Dwellin	gs with	kWh Im	pacts				_	-	irst-Year S	avings					_		elling R	Receivin	g Meas		nd Savin	gs			
Measure	Total E	lectric	Gas	Propane	Fuel e Oil	Other		ason J Heating	ıg				Spending on Materials & Labor (\$)	Sun kW	nmer kWh	Electricity W kW	inter kWh	Annual kWh	Pk-Day therms			Fuel Oil O gallons M	ther Mate	ing on erials or (\$)	Sumn kW	ner	lectricity Wint kW	ter			as Annual therms		Fuel Oil Oil gallons Mi	
Total Efficiency Measures	100	100	73	20	0 1	0	100	100	10				416,209	12.5		10.2		40,807	91	8,888	3 2,337	32	0	4,162	0.125		0.102		408	1.24	122	2 117	32	-
Total Shell & Htg. Sys. Repl	100	100	73	20		0	98	100					329,579	11.0	11,608	8.0	12,539	24,147	85	7,952			0	3,296	0.112	118	0.080	125	241		109			-
Total Shell Measures	100	100	73	20									164,962	11.0	11,608	8.0	12,446	24,054	38	3,550	1,223	32	0	1,650	0.112	118	0.080	124	241		49	9 6	32	
Wall Insul.	24	21	16	6			20		2				13,642	2.4	2,861	0.3	523	3,384	10				0	568	0.119	143	0.167	261	161	0.63	59			-
Open Blown Ceiling Insul Cavity Fill Insul	72 5	66 3	52 4	15 1	5 1 1 0	-	65 3		4 0				34,141 2,497	6.7 0.2	8,127 238	2.7 0.0	4,159 0	12,286 238	12 2				0	474 499	0.104	125 79	0.666	1,040 0	186 79	0.23 0.42	22 39			-
Sloped Attic Insul	0	0	0	0			0		0				0	0.0	0		0	0	0	0	0		0	0	-	-	-	-			-	-	-	-
Kneewall Insul Infil. Reduction	18 88	15 79	13 63	5 18		0	15 78		6				11,567 32,670	0.7 1.1	838 1,277		0 2,370	838 3,648	2 10				0	643 371	0.046 0.014	56 16	0.000	0 395	56 46	0.13 0.16	12 15			-
Found./Crawl. Insul	16	4	14	1	1 0	0	3		1				9,584	0.1	180	0.3	528	709	2	212	2 6	0	0	599	0.050	60	0.339	528	177	0.16	15	5 6	-	-
Bandjoist Insul.	68	3	50	15	-	-	-		3				25,888	0.0	0		469	469	3				0	381	0.000		0.100	156	156			5 5		-
Furnace Blower Fan¹ Exhaust Ventilatiori²	93 86	90 86	72 63	20 17		0	- 86	90					0 34.973	0.0 -0.2	(1.912)		7,092 (2.695)	7,092 (4.607)					0	407	0.000		(0.050)	79 (31)	79 (54)		(0	0) (0 1) (4		-
Total Heating System Repl	63	1	51	11			-	- 00	1				164,617	0.0	(1,912)		92	92					0	2,613	0.000		0.059	92	92		86			-
Condensing Htg Sys Rep	61	0	50 1	11			-	-					159,171	0.0	0		0	0	46	4,320	1,019	0	0	2,609	-	-	-	-	-	0.93	86 82			-
Non-Cond Htg Sys Repl Electric Htg Sys Repl	1	1	0	0			-	-	1				1,947 3,499	0.0	0		92	92	0	82			0	1,947 3,499	0.000	- 0	0.059	92	92	0.88	- 04	2 -		-
Heat Pump Repl	0	0	0	0	-		-		0				0	0.0	0		0	0	0		-	-	0	0	-	-	-	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	0	0 0	0	-		0				0	0.0	0	0.0	0	0	0	(0	0	0	0	-	-	-	-	-	-	-	-		-
							Numb	er of Mea	asures In	stalled b																								
	Total E	lectric	Gas	Propane	Fuel e Oil		Total	Electric	ic Gas	Prop	Fu ane O			Summer		Winter kW		Annual kWh	Pk-Day therms			Fuel Oil Ot gallons M		1	Summer kW		Winter kW			Pk-Day therms	Annual therms		Fuel Oil Ot gallons Mi	
Water Heating	95	39	50	6	6 0	0		49	19 8	5	8	0 0		0.0		0.0		3,080	5.4	936	94	0	0	791	0.000		0.001			0.108	19			-
Temp. Reduct. WH Wrap	0	0	0	0	-		0			0	0	0 0	0	0.0		0.0		0	0.0	0	0 0	0	0	0	-		-		-	-		-	-	-
Pipe Insul.	89	37	47	5	-		89				5	0 0	709	0.0		0.0		1,560	0.3	97	, , ,		0	8	0.000		0.000		42	0.01	- 2	2 2		-
LF Showerhead Faucet Aerator	0	0	0	0			0		0	0		0 0	0	0.0		0.0		0	0.0				0	0	:		-		-	-	- :	-	-	-
Std-Eff Wtr Htr Repl.	0	0	0	0			0					0 0	0	0.0		0.0		0	0.0				0	0			-			-				-
Hi-Eff or Electric Wtr Htr Repl.	53	12	38	3	3 0	0	53	12		8	3	0 0	74,455	0.0		0.0		1,521		839			0	1,405	0.000		0.003		127		22			
Lighting Refrigerator/Freezer ³	61 12	61 12					402 13		-				1,126 10,340	0.7		1.4 0.8		6,963 6,616		-	-	- :	-	18 862	0.012		0.022		114 551			-		-
Refrigerator/Freezer	0	0					0		0				10,340	0.0		0.0		0,010	-		-	- :	-	002	-		0.003		- 551	-		-	-	-
Refrigerator Exchange	10	10					10	10	0				8,692	0.6		0.6		5,014	-	-	-	-	-	869	0.062		0.058		501	-	-	-	-	-
Freezer Removal Freezer Exchange	1 2	1 2					1 2		2				40 1.608	0.1 0.1		0.1 0.1		534 1,068	1				-	40 804	0.066		0.061 0.061		534 534	-		1		-
T	400												074 770											0.740										
Total Non-Efficiency Measures Misc Ins,Attic Access/Ven	100												274,776 2,825											2,748 86										
Duct Sealing	1												94											94										
Duct Insulation Damming Material	1												62 46											62 46										
Htg. Sys. Tune & Clean	6												779											130										
Htg. Sys./WH Other	11 0												5,557 0											505 0										
Air Conditioning Work Water Heater Repair	9												343											38										
Refrigerator Coil Clean	0												0											0										
Waterbed Mattress Pad Programmable Tstat	0												0											0										
Unspecified Utility Meas	0												0											ő										
CO Detector Smoke Detector	85 39												3,405 460											40 12										
Fuses	0												0											0										
Htg Sys Safety Check	0 54												0 12,098											0 224										
Htg Sys Ventilation Water Heater Ventilation	36												6,231											173										
Bathroom Ventilation	87												12,267											141										
Dryer Ventilation Kitchen Ventilation	52 6												4,493 846											86 141										
Other Exhaust Ventilation	39												911											23										
Asbestos Removal (Minor)	0												0											0										
Health/Safety Repairs Health/Safety Other	37 0												3,215 0											87 0										
Consumables	26												322											12										
General Repairs Meter Refrig (no action)	60 86												15,814 0											264										
Meter Freezer (no action)	24												0											0										
Support	100												194,277											1,943										
Transportation Allowance Landlord Contr Misc	66 0												6,405 0											97 0										
Landlord Contr Furnace	0												0											ő										
Landlord Contr DHW Client Contr (Any)	0												0											0										
Lead Safe Work	60												4,325											72										
Unspecifed/Other	0												0										1	0										

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

impacts from communities from continuous constant ratio required by ASHINGLE CL. I not written impacts exceed summer occasion required specific required by ASHINGLE CL. I not written impacts exceed summer occasion replaces for occurrence association required by ASHINGLE CL. I not written impacts exceed summer occasion required production of the product

Total Reported Labor, Materials and Utility Admin Expenditures: \$658,824

Utility Administration Expenditures:

\$658,824 Total Labor and Material Expenditures:

						1					1	1			Billing Ad	djusted F	irst-Year S	avings				Avera	ge Billing	Adjusted				nd Saving	js		
	Numb	er of Dw	ellings w	vith Impa	acts	Νι	umber o	f Dwellin	gs with	kWh Impa		pending on			Electricity	-		-	Gas			Spending on	per Dw	elling Red	ceiving		ures	G	90	1	
Measure	Total E	lectric (Gas Pro		uel Oil Oth	ner Cool	Season ing Heat	ing				Materials & Labor (\$)	Sum kW		Win	nter kWh	Annual kWh	Pk-Day therms			Fuel Oil Other	r Materials	Summ kW	er	Winte	er /		Pk-Day therms	Annual therms		Fuel Oil Other gallons Mbtu
Total Efficiency Measures	45	45	33	9	1	0	45	45				361,717	7.4		6.3		28,887	56	5,339	1,072	104	0 8,038	0.165	0	.139		642	1.70	162	119	104 -
Total Shell & Htg. Sys. Repl	45	45	33	9	1	0	37	45				317,101	5.6	6,332	3.5	5,326	11,658	54	4,926	1,045	104	7,047	0.152	171 0	.077	118	259	1.62	149	116	104 -
Total Shell Measures	45	45	33	9	1		37	45				175,370	5.6	6,332	3.5	5,326	11,658	32	2,982	688	49	3,897	0.152	171 0	.077	118	259	0.98	90	76	49 -
Wall Insul.	25	18	21	4	0	0	18	0				40,189	2.0	2,449	0.0	0	2,449	10		98	0	1,608	0.113		.000	0	136	0.49	45		
Open Blown Ceiling Insul Cavity Fill Insul	32 18	26 9	23 15	3	1 0	0	26 9	0				37,892 27,052	1.9 0.4	2,270 543	0.6 0.0	853 0	3,123 543	6 8	554 735		22 0	0 1,184 0 1,503	0.072 0.050		.554	853 0	120 60	0.26 0.53	24 49		22 -
Sloped Attic Insul	17	13	13	3			13	0				6,032	0.5	586	0.0	ő	586	2		43	26		0.037	45 0	.000	ő	45	0.18	17	14	26 -
Kneewall Insul	6	4	6	0	0	0	4	0				1,225	0.1	177	0.0	0	177	2			0	204			.000	0	44	0.26	23		
Infil. Reduction Found./Crawl. Insul	45 15	36 5	33 10	9	1		36 5	2				28,218 16,301	0.4	539 303	0.1 0.2	219 369	758 672	4	390 72	93	3 0	0 627	0.012 0.050		.071	109 369	21 134	0.13	12 7		3 -
Bandioist Insul	12	1	7	3		0 .	-	1				1,572	0.3	0	0.2	163	163	0		91 4	1		0.050		106	163	163	0.08	1		1 -
Furnace Blower Fan ¹	43	43	33	9	1	0 .	-	43				0	0.0	0	3.0	4,569	4,569	(0)			(0)		0.000	0 0	.069	106	106	(0.00)	(0	(0)	(0) -
Exhaust Ventilation ²	24	24	17	4	1	0	24	24				16,889	-0.1	(534)		(847)	(1,382)	(1)	(59)	(16)	(2)	704	-0.003		.023)	(35)	(58)	(0.04)	(3	(4)	(2) -
Total Heating System Repl	29	0	22	6	1	0 .		0				141,731	0.0) O	0.0	0	0	21	1,944		55	0 4,887	-	- '	-	- '	- 1	0.96	88		55 -
Condensing Htg Sys Rep Non-Cond Htg Sys Repl	27	0	21	5	1 0	0 .	-	-				130,120 11,611	0.0	0	0.0 0.0	0	0	20	1,871 73	284 74	55 0	1,010	-	-	-	-	-	0.97	89 73		55 -
Electric Htg Sys Repl	2	0	0	0		0 .		- 0				0 11,011	0.0	0	0.0	0	0	0			0				:		-	0.79	- 13	- 14	: :
Heat Pump Repl	0	ō	0	ō	0	0 -		0				0	0.0	0	0.0	0	0	0	0	0	0	0	-	-		-	-	-	-	-	
Other Htg Sys Repl	0	0	0	0	0	0 -	-	0				0	0.0	0	0.0	0	0	0	0	0	0	0 0	-	-	-	-	-	-		-	
						Nur	nber of M	easures li	nstalled b	y Fuel Type																					
					uel					Fuel		:	Summer		Winter		Annual	Pk-Day			uel Oil Other		Summer		inter			Pk-Day	Annual		Fuel Oil Other
Water Unation	Total E	lectric (Gas Pro	pane C			al Elec	tric Ga	s Propa	ne Oil	Other	22.022	kW		kW		kWh	therms 2.4	therms 412	gallons 27	gallons Mbti	700	kW		(W			therms	therms		gallons Mbtu
Water Heating Temp. Reduct	42	0	0	0		0	0	0	0	0 0	0	33,030	0.0		0.0		969	0.0	412	0	0	786	0.000		.000		- 5/	0.104	18	14	
WH Wrap	0	0	0	ō			0			0 0	0	0	0.0		0.0		0	0.0		0	0	o o	-				-		-	-	1 1
Pipe Insul.	41	17	22	2	0		41		22	2 0	0	820	0.0		0.0		717	0.1	40		0	20	0.000		.000		42	0.01	2	1	
LF Showerhead	0	0	0	0			0			0 0	0	0	0.0		0.0		0	0.0	0		0	0	-		-		-	-	-	-	
Faucet Aerator Std-Eff Wtr Htr Repl.	0	0	0	0			0			0 0	0	0	0.0		0.0		0	0.0		0	0	0	-		:		1	-		1	
Hi-Eff or Electric Wtr Htr Repl.	19	2	15	2	ő		19		15	2 0	0	32,210	0.0		0.0		252	2.3			Ö	1,695	0.000	0	.003		126	0.15	25	12	
Lighting	44	44				5	68	567				3,955	1.2		2.3		11,695	-	-	-					.052		266	-		-	
Refrigerator/Freezer ³	8	8					9	9				7,631	0.6		0.5		4,566	-	-	-		954	0.070	0	.066		571	-	-	-	
Refrigerator Removal Refrigerator Exchange	0 8	0 8					0	0 8				7,152	0.0 0.5		0.0 0.5		4,032	-		-		0 894	0.062	0	.058		- 504		- 1		1 1
Freezer Removal	0	0					0	0				7,132	0.0		0.0		4,002	-				0004	- 0.002		-		-	-	-	_	
Freezer Exchange	1	1					1	1				479	0.1		0.1		534	-	-	-		479	0.066	0	.061		534	-		-	
Total Non-Efficiency Measures	45											297,107										6,602									
Misc Ins,Attic Access/Ven	41											14,110										344									
Duct Sealing	12											1,030										86									
Duct Insulation	23											4,190 1,359										182 76									
Damming Material Htg. Sys. Tune & Clean	18 19											2,569										135									
Htg. Sys./WH Other	18											17,534										974									
Air Conditioning Work	0											0										0									
Water Heater Repair Refrigerator Coil Clean	3											594 0										198									
Waterbed Mattress Pad	0											0										0									
Programmable Tstat	1											100										100									
Unspecified Utility Meas	0											0										0									
CO Detector Smoke Detector	43 33											6,226 2,878										145 87									
Fuses	0											0										0									
Htg Sys Safety Check	0											0										0	1								
Htg Sys Ventilation Water Heater Ventilation	30 19											11,650 5,915										388 311									
Bathroom Ventilation	27											3,642										135									
Dryer Ventilation	28											3,593										128									
Kitchen Ventilation	3											280										93									
Other Exhaust Ventilatior Asbestos Removal (Minor)	26 0											1,339										52 0	1								
Health/Safety Repairs	25											6,701										268									
Health/Safety Other	0											0										0]								
Consumables	0 40				_							0 22,823							·			0 571									
General Repairs Meter Refrig (no action)	40 26											22,823										5/1	1								
Meter Freezer (no action)	6											0										0									
Support	45											182,294										4,051	1								
Transportation Allowance Landlord Contr Misc	0											0										0	1								
Landlord Contr Misc Landlord Contr Furnace	0											0										0	1								
Landlord Contr DHW	0											ő										ő									
Client Contr (Any)	0											0										0	1								
Lead Safe Work	24 0										1	8,280										345	1								
Unspecifed/Other	U											0										1 0	1								

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$1,151,326

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$1,151,326

						1						ı	İ		Billina A	diusted F	irst-Year S	avings				1	Averag	e Billina					nd Saving	s			
	Num	ber of D	wellings	with Im	npacts		Number	of Dwe	llings with	h kWh Im	pacts				_	-			•						elling R	eceivin	ng Meas				1		
M	Tatal		C D		Fuel	O4b C	Season ooling He	-4:				Spending on Materials	Sum			nter kWh	Annual kWh	Pk-Day	Gas Annual				Spending on Materials	Sumn		lectricity Wint	ter			Annual		Fuel Oil Other	
Measure												& Labor (\$)	kW	KWN	kW	KWN		therms			gallons		& Labor (\$)			kW	kWh		therms	therms		gallons Mbtu	
Total Efficiency Measures	94	94	83	9			93	94				633,424	20.3		14.3		61,291	170					6,739	0.218		0.152		652		203			
Total Shell & Htg. Sys. Repl Total Shell Measures	94	94 94	83	9	0	0	89	94 94				471,576 329,917	17.7 17.7	20,019	11.4 11.3	17,733 17,623	37,752 37,641	158 106	14,701 9,873	2,026 1,386	0		5,017 3,510	0.198		0.121	189 187	402 400	1.90 1.28	177			
Wall Insul.	65	56	62	3	0	0	56	0				98,426	6.8	8,171	0.0	0	8,171	38	3,534	208	0	0	1,514	0.121	146	0.000	0	146	0.61	57	69		-
Open Blown Ceiling Insul	93	82	82	9	0	0	82	2				59,312	7.2	8,643	2.2	3,445	12,088	44	4,065	711	0		638	0.087		1.104	1,723	147	0.53	50	79		
Cavity Fill Insul Sloped Attic Insul	22 31	19 26	18 26	4	0	0	19 26	0				20,873 13,364	1.1	1,379 1,348	0.0	0 385	1,379 1,734	8 7	789 647		0	0	949 431	0.060 0.043		0.000 0.247	0 385	73 67	0.47 0.27	44 25			
Kneewall Insul	18	18	14	4	0	0	18	0				3,647	0.3	403	0.2	305	403	2	188		0		203	0.043		0.000	300		0.27	13	5		
Infil. Reduction	94	83	83	9	Ö	ő	83	2				48,066	1.3	1,525	0.1	164	1,689	7	661	113	Ö		511	0.015	18	0.052	82		0.09	8	13		
Found./Crawl. Insul	21	1	19	2	0	0	1	0				5,466	0.0	60	0.0	0	60	1	95	29	0		260	0.050		0.000	0	60	0.05	5	14		
Bandjoist Insul.	63	1	56	6	0	0	-	1				6,362	0.0	0	0.1	142	142	2			0		101	0.000		0.091	142		0.04	3	4		
Furnace Blower Fan ¹ Exhaust Ventilation ²	92 68	92 68	83 60	9	0	0	- 68	92 68				74 401	0.0	0		15,310 (1.823)	15,310 (3.334)	(0)			0		1 094	0.000		0.107	166		(0.01)	(0)	(1)		
Total Heating System Repl	66	1	60	5	0	0	- 68	1				141,659	0.0	(1,510)	0.1	(1,823)	(3,334)				0	•	2,146	0.000		0.017)	111	111	0.86	80			_
Condensing Htg Sys Rep	64	0	60	4	0	0	-	-				135,866	0.0	0	0.0	0	0	52		584	0	0	2,123	-	-	-	-	-	0.86	80	146		-
Non-Cond Htg Sys Repl	1	0	0	1	0	0	-	-				1,866	0.0	0	0.0	0	0	0	0	56	0		1,866	-	-	-	-	-	-	-	56		
Electric Htg Sys Repl	0	0	0	0	0	0	-	0				0	0.0	0	0.0	0	0	0			0		0	-	-	-			-	-	-		
Heat Pump Repl Other Htg Sys Repl	1	1	0	0	0	0		1				3,927	0.0	0	0.1	111	111	0	0	0	0		3,927	0.000	0	0.071	111	111	1		- 1		
ng oyo nop						-							0.0		0.0								•										-
					Fuel		Number of	Measure	es Installed	by Fuel Ty	yp€		Summer		Winter		Annual	Pk-Day	Annual	Propane	F 0:1	044		Summer		Winter			Pk-Day	Annual	D	Fuel Oil Other	
	Total	Electric	Gas F			Other	Total Ele	ectric	Gas Pro	pane Oi	eı il Other		kW		kW		kWh	therms			gallons		ľ	kW		kW			therms	therms		gallons Mbtu	
Water Heating	93	13	75	5	0	0	200	23	168		0 0	135,759	0.0		0.0		1,661		2,111		0	0	1,460	0.000		0.002		128	0.161	28			
Temp. Reduct.	0	0	0	0	0	0	0	0	0		0 0	0	0.0		0.0		0	0.0	0	0	0	0	0	- :		-		-	-	-	-		
WH Wrap Pipe Insul.	0 90	12	0 73	0 5	0	0	0 90	0 12	0 73		0 0	1,710	0.0 0.0		0.0		507	0.0 0.5			0		19	0.000		0.000		42	0.01	- 2	- 3	1 1	
LF Showerhead	17	1	16	0	0	ő	17	1	16		0 0	170	0.0		0.0		171	0.3			0		10	0.000		0.004		171	0.02	6	- "		
Faucet Aerator	12	2	10	0	ō	0	15	3	12		0 0	75	0.0		0.0		97	0.0	14	0	0		6	0.000		0.001		48	0.00	1	-		
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0	0	0		0 0	0	0.0		0.0		. 0	0.0			0		0					-	-				
Hi-Eff or Electric Wtr Htr Repl.	78 58	7 58	67	4	0	0	78 316	316	67	4	0 0	133,804 2,212	0.0		0.0		886 4.516	11.2	1,829	133	0	0	1,715 38	0.000		0.003		127 78	0.17	27	33		_
Lighting Refrigerator/Freezer ³	32	32					34	34				23,877	2.1		2.0		17,362						746			0.013		543					-
Refrigerator Removal	0	0					0	0				0	0.0		0.0		0	-	-	-	-	-	0	-		-		-	-	-	-		-
Refrigerator Exchange	25	25					25	25				19,877	1.5		1.4		12,556	-	-	-	-	-	795	0.062		0.058		502	-	-	-		
Freezer Removal Freezer Exchange	1 8	1 8					1	1 8				25 3,975	0.1 0.5		0.1 0.5		534 4,272	-	-	-	-	-	25 497	0.066		0.061 0.061		534 534	-	-	-		
Freezer Exchange	0						0	0				3,913	0.5		0.5		4,212	_		-			497	0.000		0.001		334	-		-		_
Total Non-Efficiency Measures	94											517,902											5,510										
Misc Ins,Attic Access/Veni Duct Sealing	94 89											17,495 6,372											186 72										
Duct Insulation	25											1,853											74										
Damming Material	62											2,458											40										
Htg. Sys. Tune & Clean	22											1,483											67										
Htg. Sys./WH Other	23 19											7,951 381											346 20										
Air Conditioning Work Water Heater Repair	7											302											43										
Refrigerator Coil Clean	ó											0											0										
Waterbed Mattress Pad	0											0											0										
Programmable Tstat Unspecified Utility Meas	2											100											50 0										
CO Detector	81											4,225											52										
Smoke Detector	47											2,296											49										
Fuses	6											690											115										
Htg Sys Safety Check Htg Sys Ventilation	0 12											0 2,349											0 196										
Htg Sys ventilation Water Heater Ventilation	12 8											2,349 710											196										
Bathroom Ventilation	9											1,263											140										
Dryer Ventilation	67											4,403											66										
Kitchen Ventilation	4 50											444 1,411											111 28										
Other Exhaust Ventilatior Asbestos Removal (Minor)	50											1,411 4,596											1,149										
Health/Safety Repairs	84											106,979											1,274										
Health/Safety Other	26											1,209											46										
Consumables	53											2,084								<u></u>		T	39										
General Repairs Meter Refrig (no action)	92 60											21,427											233										
Meter Rerng (no action) Meter Freezer (no action)	26											0											0										
Support	94											304,308											3,237										
Transportation Allowance	53											5,638											106										
Landlord Contr Misc	0											0											0										
Landlord Contr Furnace Landlord Contr DHW	0											0											0										
Client Contr (Anv)	0											0											0										
Lead Safe Work	70											15,477											221										
Unspecifed/Other	0												1										0										

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

Dalhoff Associates, LLC

² Impacts from continuous exhaust fans required by ASHAE 62.2. The winter impacts exceed summer because these also include heating season impacts for deelings with electric heat.

3 The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$607,933

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$607,933

						1					1	ı		Billing A	diveted E	irst-Year S	avinge				1	Avorac	o Billina			Voor C	•	nd Saving	ie.		
	Num	ber of D	wellings	with Im	pacts	N	lumber of	Dwellina	s with kW	/h Impacts				Dilling A	ujusted F	ııst-rear S	avings					Averag		elling Re				ıu savıng	js		
					Fuel		Season	9			Spending on Materials	Sum		Electricity Win	ator.	Annual		Gas Annual	Bronan -	Eugl Oil	Othor	Spending on Materials	Summ	EI	ectricity	ĭ	1	Ga Pk-Day	as Annual	Dronor -	Fuel Oil Other
Measure	Total	Electric	Gas P				Season oling Heatir	ng			& Labor (\$)	kW	kWh		kWh	kWh	therms		gallons			& Labor (\$)							therms		gallons Mbtu
Total Efficiency Measures	35	35	30	3	0	0	35 ;	35			315,886	6.6		4.5		19,378	110	10,893	1,119	0	0	9,025	0.188		0.128		554	3.67	363	373	
Total Shell & Htg. Sys. Repl	35	35	30	,	0	0	35 3	35			253,886	5.8	6,501	3.4	5,345	11,846	102	9,480	1,119	0	0	7,254		186	0.098	153	338	3.39	316	373	
Total Shell Measures	35	35	30	3	0	0		35			160,187		6,501	3.4	5,254	11,756	61	5,673	520	0	0	4,577	0.166	186	0.096	150	336	2.03	189		
Wall Insul.	13	13	12	1	0	0	13	0			23,284	1.5	1,850	0.0	0	1,850	16		32	0	0	1,791	0.118		0.000	0	142	1.32	123	32	
Open Blown Ceiling Insul Cavity Fill Insul	30 13	30 13	26 13	3	0	0	30 13	0			22,207 7,346	2.0 0.7	2,373 800	0.4 0.0	676 0	3,050 800	10	976 631	117 0	0	0	740 565	0.066 0.051		0.433	676 0	102 62	0.40 0.52	38 49	39	: :
Sloped Attic Insul	9	9	7	2	ō	0	9	0			3,937	0.5	625	0.0	0	625	5	431	191	0	0	437	0.058	69	0.000	0	69	0.66	62	95	
Kneewall Insul Infil. Reduction	12	12	11 30	1	0	0		0			3,975 53,396	0.3	414 544	0.0	0 1.300	414 1,844	4	413 1.461	11 185	0		331 1.526	0.029		0.000 0.416	0 650	35 53	0.40 0.52	38 49	11	
Found./Crawl. Insul	35 14	35 8	13	0	0	0	35 8	2			14,699	0.5	494	0.8	254	749	16 3	326	0	0	0	1,050	0.013		0.416	254	94	0.52	49 25	62	
Bandjoist Insul.	20	1	18	1	ō		-	1			3,808	0.0	0	0.1	101	101	2	150	12	0	0	190	0.000	0	0.065	101	101	0.09	8	12	
Furnace Blower Fan1	33	32	30	3	0	-		32			0	0.0	0		3,678	3,678	(0)			0		0	0.000		0.074	115	115	(0.01)	(1)		
Exhaust Ventilation Total Heating System Repl	27 27	27	23	3	0	0	27 2	27			27,535 93,700	-0.1	(600)	(0.5)	(756) 91	(1,356)	(2)		(25) 599	0	0	1,020 3,470	-0.003	(22)	0.018)	(28) 91	(50) 91	(0.08)	(7) 166	(8)	
Condensing Htg Sys Rep	26	0	23	3	0	0	: .				91,100	0.0	0	0.0	0	91	41		599	0	0	3,504	-	-	0.000	-	- 91	1.78	166	200	
Non-Cond Htg Sys Repl	0	0	0	0	0	0					0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	
Electric Htg Sys Repl Heat Pump Repl	1 0	1	0	0	0	0		1			2,600	0.0	0	0.1 0.0	91 0	91 0	0			0		2,600	0.000	0	0.058	91	91	-	-	-	
Other Htg Sys Repl	0	0	0	0	0	0		0			0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	: :
				-												-						-									
					Fuel	Nu	ımber of Me	asures Ins	tailed by F	uel Type Fuel		Summer		Winter		Annual	Pk-Day	Annual	Propane	Fuel Oil	Other		Summer	v	Vinter	,	Annual	Pk-Day	Annual	Propane	Fuel Oil Other
W. C. H. C.			Gas F	ropane	Oil Ot			ic Gas				kW		kW		kWh	therms	therms	gallons	gallons	Mbtu		kW		kW		kWh	therms	therms	gallons	gallons Mbtu
Water Heating Temp. Reduct	34	6	28	0	0	0		11 52 0 0		0	0 55,441	0.0		0.0		888	8.3	1,413	0	0	0	1,631	0.000		0.003		148	0.296	50	-	
WH Wrap	ō	0	ō	0	0	ő	Ō	0 0	0	ō	0 0	0.0		0.0		ō	0.0		0	ō	0	0	-		-		-	-	-	-	
Pipe Insul.	34	6	28	0	0			6 28		0	0 340			0.0		253	0.3			0		10	0.000		0.000		42	0.01	4	-	
LF Showerhead Faucet Aerator	0	0	0	0	0	0		0 0		0	0 0	0.0		0.0 0.0		0	0.0		0	0	0	0	-					-	- 1	-	
Std-Eff Wtr Htr Repl.	0	0	0	0	Ö	ō	0	0 0	0	Ö	0 0	0.0		0.0		0	0.0	0	0	0	0	0	-		-		-	-	-	-	
Hi-Eff or Electric Wtr Htr Repl.	29	5	24	0	0	0	29	5 24	. 0	0	0 55,101	0.0		0.0		635	7.9			0	0	1,900	0.000		0.003		127	0.33	54	-	
Lighting Refrigerator/Freezer ³	32 6	32					265 26 6	6			1,947 4,612	0.4		0.7		3,602 3,041	-		-		-	61 769	0.012		0.022		113 507				
Refrigerator Removal	0	0						0			0	0.0		0.0		0	-	-	-		-	0	-		-		-		- :	-	
Refrigerator Exchange	5	5						5			4,073	0.3		0.3		2,507	-	-	-	-	-	815	0.062		0.058		501	-	-	-	
Freezer Removal Freezer Exchange	0	0 1						0			0 539	0.0 0.1		0.0 0.1		0 534	- 1		- 1	-	-	539	0.066		0.061		534	-	-		
	05										202.247											2044									
Misc Ins,Attic Access/Ven	35 34										292,047 15,028											8,344 442									
Duct Sealing	1										300											300									
Duct Insulation	23										1,875											82									
Damming Material Htg. Sys. Tune & Clean	18 10										1,186 4,309											66 431									
Htg. Sys./WH Other	11										3,712											337									
Air Conditioning Work	1										175											175									
Water Heater Repair Refrigerator Coil Clean	2 0										864 0											432 0									
Waterbed Mattress Pad	0										0											0									
Programmable Tstat Unspecified Utility Meas	0										0											0									
CO Detector	34										806											24									
Smoke Detector	31										791											26									
Fuses Htg Sys Safety Check	0										0											0									
Htg Sys Ventilation	28										9,556											341									
Water Heater Ventilation	23										5,708											248									
Bathroom Ventilation Dryer Ventilation	31 28										7,006 4,046											226 145									
Kitchen Ventilation	2										137											69									
Other Exhaust Ventilation	0										0											0									
Asbestos Removal (Minor) Health/Safety Repairs	0 30										0 47,353											0 1,578									
Health/Safety Other	12										1,124											94									
Consumables	0										0											0									
General Repairs Meter Refrig (no action)	33 23										32,694											991									
Meter Freezer (no action)	5										0											0									
Support	35										147,962											4,227									
Transportation Allowance Landlord Contr Misc	0										0											0									
Landlord Contr Misc Landlord Contr Furnace	0										0											0									
Landlord Contr DHW	Ō										ő											ő									
Client Contr (Any)	0										7 444											0									
Lead Safe Work Unspecifed/Other	20 0										7,414 0											371 0									
2p = 011001 O 11101											U	1										U									

Estimates are based upon reduced usage of the furnace due to shell improvements

Impacts from continuous exhaust fans required by ASHPAE 02. The winter impacts exceed summer because these also include healing season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$432,515

Utility Administration Expenditures:

\$432,515 Total Labor and Material Expenditures:

	Number of	Dwollings	with Impa	cte	Numi	har of Dwg	ellings with kWh Impacts				Billing A	djusted F	irst-Year S	avings				Avera		Adjusted F			and Savin	gs	
	Number of	Dweilings					enings with kwn impacts	Spending on			Electricity				Gas			Spending on	•	Electi	ricity			Gas	
Measure	Total Electric	Gas Pi	Fu opane Oi		Sea cr Cooling			Materials & Labor (\$)	kW	mmer kWh	kW	kWh	Annual kWh	therms	therms	gallons	uel Oil Othe gallons Mbt	Materials Labor (\$)	Summ kW	er kWh kW	Winter V kW	h kWh	l Pk-Day therms	Annual therms	Propane Fuel Oil Oth gallons gallons Mb
Total Efficiency Measures	29 29	22	3	0	0 29	29		233,384	5.8		7.4		23,210	55	5,067	417	0	0 8,048	0.199	0.2	:55	800	2.51	230	139
Total Shell & Htg. Sys. Repl	29 29			0		29		198,155	5.1	5,771	6.6	9,665	15,436	53	4,671	409		0 6,833	0.175	199 0.2				212	
Total Shell Measures	29 29				0 29	29		106,070	5.1	5,771	6.4	9,413	15,184	24	2,143	229		0 3,658	0.175	199 0.2		25 524		97	76
Wall Insul. Open Blown Ceiling Insul	14 13 19 19			0		3 4		13,748 19,771	1.8 2.1	2,167 2,504	0.5 3.7	5,463	2,874 7,967	6 11	523 930	3 79		0 982 0 1,041	0.150 0.115	181 0.1 139 0.9		36 221 66 419		52 66	
Cavity Fill Insul	2 2			0		0		1,173	0.1	131	0.0	0,400	131	0	13	30	ő		0.054	65 0.0		0 65		13	
Sloped Attic Insul	8 7	7	0	0	0 7	1		3,867	0.5	544	0.3	422	966	3	237	0	0	0 483	0.064	78 0.2	86 4	22 138	0.39	34	
Kneewall Insul	5 5			0		2		1,629	0.0	33	0.1	112	145	0	6	0	0	0 326	0.007	8 0.0		56 29		2	
Infil. Reduction Found /Crawl. Insul	28 27 8 4			0	0 26	4		33,256 4,866	0.4	502 316		383 470	886 786	5	408 53	66 59	0	0 1,188 0 608	0.016	19 0.0 79 0.3		96 33 70 196		19 9	
Bandjoist Insul	8 4 17 3			0		3		2,860	0.3	316		227	227	1	48	59 5	0	0 168	0.000	0 0.0		70 196 76 76		4	
Furnace Blower Fan ¹	25 25			0		25		2,000	0.0	0		2,680	2,680	(0)		(1)		0 0	0.000	0 0.0		07 107		(0	
Exhaust Ventilation	19 19		-	-	19	19		24,898	-0.1	(425)		(1,051)	(1,476)		(68)	(11)	0	0 1,310	-0.003	(22) (0.0		55) (78		(5	(6)
Total Heating System Repl	19 2				0 -	2		92,085	0.0	0		252	252		2,528	181		0 4,847	0.000	0 0.0		26 126		169	
Condensing Htg Sys Rep	16 0				0 -	-		63,910	0.0	0		0	0		2,063	83		0 3,994	-		-	-	1.56	138	
Non-Cond Htg Sys Repl	3 0 1 1			0				16,800	0.0	0		0	0	5	465 0	97		0 5,600 0 1,500	-			- 400	2.64	233	97
Electric Htg Sys Repl Heat Pump Repl	1 1	0	-	0	0 -	1		1,500 9,875	0.0	0		132 120	132 120	0	0	0	-	0 1,500 0 9,875	0.000	0 0.0		32 132 20 120			
Other Htg Sys Repl	0 0				0 -	Ö		9,673	0.0	0		0	0	0	0	0	0	0 9,873	-			20 120	' -		
- · ·		-	-		1					-		,	-												
			Fu	el	Numbe	r of Measur	es Installed by Fuel Type Fuel		Summer		Winter		Annual	Pk-Day	Annual	Propane i	uel Oil Othe		Summer	Wint	ter	Annua	l Pk-Day	Annual	Propane Fuel Oil Oth
Water Heating	Total Electric				or Total	Electric 28	Gas Propane Oil Othe	er 0 28,620	kW		kW 0.0		kWh 1,921	therms			gallons Mbt		kW 0.000	0.0	V	kWh	therms 0.149	therms 26	gallons gallons Mb
Temp. Reduct.	0 0			0	00	0		0 20,020	0.0		0.0		1,921	0.0	396	0	0	0 1,060	-	0.0		- 1/5	0.149	- 20	
WH Wrap	0 0	0		Ö		0	0 0 0	0 0	0.0		0.0		ō	0.0	0	ő	ő	o o	-	-		-	-	-	
Pipe Insul.	19 11	8	0	0	0 19	11	8 0 0	0 62	0.0		0.0		467	0.1	24	0	0	0 3	0.000	0.0	000	42		3	
LF Showerhead	12 6			0		7	6 1 0	0 125	0.0		0.0		1,036	0.1	36	8	0	0 10	0.000	0.0		173	0.02	7	8
Faucet Aerator Std-Eff Wtr Htr Repl.	10 5 0 0	-		0		9	5 0 0	0 33	0.0		0.0		292	0.0	7	0	0	0 3	0.000	0.0	101	58	0.00	1	
Hi-Eff or Electric Wtr Htr Repl.	12 1	11			0 12	1	11 0 0	0 28,400	0.0		0.0		126	0.0 2.0	330	0	0	0 2,367	0.000	0.0	103	126	0.18	30	
Lighting	14 14				127	127		415			0.3		1,724	-	-	-			0.013	0.0		123		-	
Refrigerator/Freezer ³	6 6				8	8		6,195	0.5		0.5		4,129	-	-	-	-			0.0		688		-	
Refrigerator Removal	1 1				1	1		100	0.1		0.1		501	-	-	-	-	100	0.062	0.0		501		-	
Refrigerator Exchange Freezer Removal	4 4 0 0				4 0	4		3,630	0.2		0.2		2,026	-	-	-	-	908	0.062	0.0	158	506	-	-	
Freezer Removal Freezer Exchange	3 3				3	3		2,465	0.0		0.0		0 1,602				-	822	0.066	0.0	161	534		-	
													.,	1				•				-			
Total Non-Efficiency Measures Misc Ins.Attic Access/Ven	29 27							199,131 13,184										6,867							
Duct Sealing	5							2,121										424							
Duct Insulation	4							587										147							
Damming Material	21							1,253										60							
																		455							
Htg. Sys. Tune & Clean	8							1,243										155							
Htg. Sys./WH Other Air Conditioning Work	8 6 1							1,243 3,682										614							
Htg. Sys./WH Other	8 6 1 1							1,243																	
Hig. Sys./WH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean	6 1 1 0							1,243 3,682 100 100 0										614 100							
Htg. Sys./WH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad	6 1 1 0 0							1,243 3,682 100 100 0										614 100 100							
Htg. Sys./WH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat	6 1 1 0							1,243 3,682 100 100 0										614 100 100							
Htg. Sys./WH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad	6 1 1 0 0							1,243 3,682 100 100 0 0										614 100 100 0 0 0							
Hig. Sys.WH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector	6 1 1 0 0 0 0 0 0							1,243 3,682 100 0 0 0 0 0 0 690 825										614 100 100 0 0 0 0 28 39							
Hig. Sys.WH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses	6 1 1 0 0 0 0 0 0 25 21 0							1,243 3,682 100 100 0 0 0 0 690 825										614 100 100 0 0 0							
Hig. Sys.MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Hig Sys Safety Check	6 1 1 0 0 0 0 0 25 21 0							1,243 3,682 100 100 0 0 0 0 690 825 0										614 100 100 0 0 0 0 28 39 0							
Hig. Sys.WH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses	6 1 1 0 0 0 0 0 0 25 21 0							1,243 3,682 100 100 0 0 0 0 690 825										614 100 0 0 0 0 0 28 39 0 0 441 193							
Hig. Sys.MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Hig Sys Safety Check Hig Sys Ventillation Water Heater Ventillation Bathroom Ventilation	6 1 1 0 0 0 0 0 25 21 0 0 16 11 6							1,243 3,882 100 100 0 0 0 0 690 825 0 7,050 2,125 895										614 1000 1000 0 0 0 28 39 0 0 441 193 149							
Hig. Sys./MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Hig Sys Safety Check Hig Sys Ventilation Water Heater Ventilation Bathroom Ventilation Bathroom Ventilation Dryer Ventilation	6 1 1 0 0 0 0 25 21 0 0 16 11 6							1,243 3,882 100 100 0 0 0 690 825 0 0 7,050 2,125 895										614 100 0 0 0 0 0 0 0 28 39 0 0 0 441 193 149 116							
Hig. Sys.WH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Hig Sys Safety Check Hig Sys Ventilation Water Heater Ventiliation Bathroom Ventilation Dryer Ventilation Kitchen Ventilation	6 1 1 0 0 0 0 25 21 0 0 16 11 6 14 2							1,243 3,882 100 100 0 0 0 0 0 825 0 7,050 2,125 895 1,629 263										614 100 0 0 0 0 28 28 39 0 441 193 149 116							
Hig. Sys./MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Hig Sys Safety Check Hig Sys Ventilation Water Heater Ventilation Bathroom Ventilation Bathroom Ventilation Dryer Ventilation	6 1 1 0 0 0 0 25 21 0 0 16 11 6							1,243 3,882 100 100 0 0 0 690 825 0 0 7,050 2,125 895										614 100 0 0 0 0 0 0 0 28 39 0 0 0 441 193 149 116							
Hig. Sys./MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Simoke Detector Fuses Hig Sys Safety Check Hig Sys Ventilation Water Heater Ventilation Bathroom Ventilation Dryer Ventilation Kitchen Ventilation Other Exhaust Ventilatior Asbestos Removal (Minor) Heath's/Safety Repairs	6 1 1 0 0 0 0 0 0 0 0 0 0 16 11 6 14 2 13 0 0 23							1,243 3,862 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0										614 100 0 0 0 0 0 28 39 0 0 441 193 149 116 132 44 0							
Hig. Sys./MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Hig Sys Safety Check Hig Sys Ventilation Water Heater Ventilation Bathroom Ventilation Dryer Ventilation Kitchen Ventilation Other Exhaust Ventilatior Asbestos Removal (Minor) Health/Safety Repairs Health/Safety Repairs	6 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							1,243 3,882 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0										614 100 0 0 0 0 0 28 39 0 0 441 193 149 116 132 44 0 1,270							
Hig. Sys./MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tetat Unspecified Utility Meas CO Detector Simoke Detector Fuses Hig Sys Safety Check Hig Sys Ventillation Water Heater Ventilation Bathroom Ventilation Dryer Ventilation Kitchen Ventilation Kitchen Ventilation Other Exhaust Ventilatior Asbestos Removal (Minor) Health/Safety Repairs Health/Safety Other Consumables	6 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							1,243 3,882 100 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0										614 1000 0 0 0 0 0 0 28 39 0 0 441 193 149 116 132 44 0 0 1.270							
Hig. Sys.MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Hig Sys Safety Check Hig Sys Ventilation Bathroom Ventilation Bathroom Ventilation Bother Consumation Kitchen Ventilation Kitchen Ventilation Heathn'Safety Other Consumables General Repairs Heathn'Safety Other Consumables General Repairs Heter Refrig (no action)	6 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							1,243 3,882 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0										614 100 0 0 0 0 0 28 39 0 0 441 193 149 116 132 44 0 1,270							
Hig. Sys.MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbeak Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Hig Sys Safety Check Hig Sys Ventilation Water Heater Ventilation Bathroom Ventilation Bathroom Ventilation Other Exhaut Ventilatior Asbestos Removal (Minor) Health/Safety Repairs Heath/Safety Other Consumables General Repairs Meter Refrig (no action) Meter Freezer (no action)	6 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							1,243 3,882 100 100 0 0 0 0 0 690 825 2,125 895 1,629 263 572 0 29,209 312 0 0										614 1000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							
Hig. Sys.MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Hig Sys Safety Check Hig Sys Ventilation Bathroom Ventilation Bathroom Ventilation Bother Consumation Kitchen Ventilation Kitchen Ventilation Heathn'Safety Other Consumables General Repairs Heathn'Safety Other Consumables General Repairs Heter Refrig (no action)	6 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							1,243 3,882 100 100 0 0 0 0 690 825 2,125 895 1,629 263 572 0 29,209 312										614 1000 0 0 0 0 0 0 28 39 0 0 441 193 149 116 132 44 0 0 1.270							
Hig. Sys.MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Hig Sys Safety Check Hig Sys Ventilation Bathroom Ventilation Bathroom Ventilation Bathroom Ventilation Kitchen Ventilation Kitchen Ventilation Kitchen Ventilation HeathniSafety Other Consumables General Repairs HeathniSafety Other Consumables General Repairs Heater Freezer (no action) Meter Freezer (no action) Meter Freezer (no action) Meter Freezer (no action) Support Transportation Allowance Landford Contr Misc	6 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							1,243 3,882 100 00 0 0 0 690 825 0 7,050 2,125 895 1,629 263 572 0 29,209 312 2,962 0										614 1000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							
Hig. Sys./MH Other Air Conditioning Work Water Heater Repair Refrigerator Coll Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Hig Sys Safety Check Hig Sys Ventilation Water Heater Ventilation Bathroom Ventilation Bathroom Ventilation Kitchen Ventilation Kitchen Ventilation Kitchen Ventilation Heathin Safety Other Consumables General Repairs Health Safety Other Consumables General Repairs Meter Refrig (no action) Meter Freezer (no action) Support Transportation Allowance Landlord Contr Furnace	6 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							1,243 3,862 100 100 0 0 0 0 0 0 0 0 0 0 0 0										614 1000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							
Hig. Sys.MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbed Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Sys Ventilation Hig Sys Ventilation Bathroom Ventilation Bathroom Ventilation Bothroom Ventilation Kitchen Ventilation Kitchen Ventilation Kitchen Ventilation Heatin\Safety Other Consumables General Repairs Heatin\Safety Other Consumables General Repairs Heater Freezer (no action) Meter Freezer (no action) Meter Freezer (no action) Support Transportation Allowance Landford Contr Misc Landford Contr Misc Landford Contr UHW	6 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							1,243 3,682 100 100 0 0 0 0 0 690 825 0 7,050 2,125 895 1,629 263 572 0 29,209 312 0 22,962 0 105,682										614 1000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							
Hig. Sys./MH Other Air Conditioning Work Water Heater Repair Refrigerator Coil Clean Waterbeet Mattress Pad Programmable Tstat Unspecified Utility Meas CO Detector Smoke Detector Fuses Hig Sys Safety Check Hig Sys Safety Check Hig Sys Ventilation Water Heater Ventilation Bathroom Ventilation Bathroom Ventilation Kitchen Vent	6 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							1,243 3,682 100 100 0 0 0 0 0 690 825 0 7,050 2,125 895 1,629 263 572 0 29,209 312 0 22,962 0 105,682										614 1000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

Dalhoff Associates, LLC

Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$1,038,369

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$1,038,369

							ı						1	1			Dilling A	dinated F	irot Voo- S	ovinac				1	A.z.	na Dilli			t Voor			. ,,			
	Nu	mber of	Dwelli	ngs wit	th Impa	acts		Numbe	r of Dw	ellings v	vith kW	h Impact	s				oiling A	ujusted F	irst-Year S	avings					Averag			tea Firs Receivii			nd Savin	jə			
				J	-	uel		Seaso		J			Sp	ending on Materials	Sum		lectricity Wir	nter	Annual	Pk-Day	Gas Annual	Propage	Fuel Oil	Other	Spending on Materials	Sumr	_	Electricit Win	ty		G I Pk-Day	as Annual	Propens	Fuel Oil Othe	er
Measure	Total	Electric	Gas	Propa			ther C	Seaso Cooling H						Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	gallons	gallons	Mbtu	& Labor (\$)	kW	kWh	kW	kWh		therms	therms		gallons Mbt	
Total Efficiency Measures	62	6:	. 6	1	1	0	0	62	62					584,168	21.3		7.4		40,964	245	21,769	545	0	0	9,422	0.343		0.119		661	4.02	357	545		
Total Shell & Htg. Sys. Repl	62	62	? 6	1	1	0	0	62	62					506,243	20.4	24,295	6.2	8,755	33,051	232	19,548	490	0	0	8,165	0.329	392	0.100	141	533		320	490		
Total Shell Measures	62	62			1	0	0	62	62					345,208	20.4	24,295	6.2	8,755	33,051	139	11,731	275	0	0	5,568	0.329	392	0.100	141	533		192			
Wall Insul. Open Blown Ceiling Insul	45 59	4: 5:			1	0	0	45 59	0					124,074 88,867	7.9 7.2	9,538 8,733	0.0	0	9,538 8,733	55 36	4,651 3,016	93 148	0		2,757 1,506	0.176 0.123	212 148	0.000	0	212 148		106 52			
Cavity Fill Insul	17	10			ò	0	0	16	0					19,011	1.1	1,373	0.0	0	1,373	9	799	0	0		1,118		86	0.000	0			47	-		
Sloped Attic Insul	29	28	3 2	9	0	0	0	28	0					14,240	1.6	1,889	0.0	0	1,889	12	1,008		0		491	0.056	67	0.000	0	67	0.41	35	-		
Kneewall Insul	20	20		9	1	0	0	20	0					7,263	0.4	454	0.0	0	454	2		8	0		363	0.019	23	0.000	0			10			
Infil. Reduction Found./Crawl. Insul	62 33	6:			1	0	0	62 13	0					59,368 23,924	1.2	1,437 1,204	0.0	0	1,437 1,204	18 5		14 14	0		958 725	0.019	23 93	0.000	0	23 93		25 14			
Bandjoist Insul.	34				ò	0	0	-	Ö					4,094	0.0	0	0.0	0	0	2			0		120	-	-	-	-	-	0.07	6			
Furnace Blower Fan ¹	62	62	2 6	1	1	0	0	-	62					0	0.0	0	6.4	9,088	9,088	(0)	(35)	(1)	0	0	0	0.000	0	0.104	147	147	(0.01)	(1) (1)	
Exhaust Ventilation	15	15		5	0	0	0	15	15					4,366	0.0	(333)	(0.2)	(333)	(666)				0		291	-0.003	(22)	(0.016)	(22)	(44		(6			
Total Heating System Repl	54	-	,	•	1	0	0		0					161,034	0.0	0	0.0	0	0		7,817	215	0		2,982		-	-	-	-	1.75	147			_
Condensing Htg Sys Rep Non-Cond Htg Sys Repl	54 0			0	0	0	0	-						161,034 0	0.0	0	0.0	0	0	93 0	7,817 0	215 0	0		2,982			-			1.75	147	215	' : :	
Electric Htg Sys Repl	ō	i)	0	0	0	0	-	0					ő	0.0	ō	0.0	0	0	0	Ō	0	0	ō	0	-	-	-	-	-	-	-	-		
Heat Pump Repl	0			0	0	0	0	-	0					0	0.0	0	0.0	0	0	0	0	0	0		0	-	-	-	-	-	-	-	-		
Other Htg Sys Repl	0)	0	0	0	0	-	U					0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	1	-	-		_
								Number o	f Measu	res Instal	ed by Fu	iel Typ€																							
	T-4-	Flact-		Day :		uel		T-4-1 5	14-1-	· ·		Fuel	D41		Summer		Winter		Annual	Pk-Day		Propane				Summer		Winter			Pk-Day	Annual		Fuel Oil Othe	
Water Heating	Total 61	Electric		Prop		0il 0	Other 0	Total E	lectric 4	100	ropane	Oil C	Other 0	71.936	kW		kW		kWh 168	therms 13.1	therms 2.221	gallons 55	gallons 0		1.179	kW 0.000		kW		kWh 42	therms 0.234	therms 40		gallons Mbtu	1
Temp. Reduct.	0	-)	0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0	0	0	0	0	0	-		-			-	-	-		_
WH Wrap	0			0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0	0	0	0		0								-		
Pipe Insul. LF Showerhead	54 0	í		.9 0	1	0	0	54 0	4	49 0	1	0	0	524 0	0.0		0.0		168 0	0.5	160 0	4	0		10	0.000		0.000		42	0.01	3	4		
Faucet Aerator	0			0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0	0	0	0		0			-			-		-		
Std-Eff Wtr Htr Repl.	0)	0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0	0		0	0	0	-		-		-	-	-	-		
Hi-Eff or Electric Wtr Htr Repl.	52 33	3:	, ,	1	1	0	0	52 279	0 279	51	1	0	0	71,412 414	0.0		0.0		3,668	12.6	2,061	51	0	-	1,373	0.012		0.022		- 111	0.25	40			_
Lighting Refrigerator/Freezer ³	7							8	8					5,575	0.4		0.7		4.077		- :	- :	÷	-	796			0.022		582		-	- 1		
Refrigerator Removal	0)					0	0					0,575	0.0		0.0		0	-		-		-	0	- 0.072		-		-	-	-	-		-
Refrigerator Exchange	5							6	6					4,385	0.4		0.3		3,009	-	-	-	-	-	877	0.074		0.069		602	-	-	-		
Freezer Removal Freezer Exchange	0)					0	0					0 1.190	0.0		0.0		1.068	-	-	-	-	-	0 595	0.066		0.061		- 534	-	-	-		
•		•	•												0.1		0.1		1,000	· -						0.000		0.001		304					_
Total Non-Efficiency Measures Misc Ins,Attic Access/Ven	62 55													454,201 15,475											7,326 281										
Duct Sealing	0													13,473											0										
Duct Insulation	19													1,084											57										
Damming Material	44 8													1,735											39										
Htg. Sys. Tune & Clean Htg. Sys./WH Other	16													1,046 12,781											131 799										
Air Conditioning Work	8													1,040											130										
Water Heater Repair	0													0											0										
Refrigerator Coil Clean Waterbed Mattress Pad	0													0											0										
Programmable Tstat	0													0											0										
Unspecified Utility Meas	0													0											0										
CO Detector Smoke Detector	43 35													2,042 882											47 25										
Fuses	2													127											64										
Htg Sys Safety Check	0													0											0										
Htg Sys Ventilation Water Heater Ventilation	22													6,251 269											284										
Water Heater Ventilation Bathroom Ventilation	2 26													2,159											135 83										
Dryer Ventilation	52													2,423											47										
Kitchen Ventilation	8													786											98										
Other Exhaust Ventilatior Asbestos Removal (Minor)	44 0													1,214 0											28 0										
Health/Safety Repairs	57													37,139											652										
Health/Safety Other	8													868											109										
Consumables General Repairs	30 62												1 -	694 53,818										I	23 868										
Meter Refrig (no action)	44													53,818											800 N										
Meter Freezer (no action)	17													0											Ö										
Support	62													302,239											4,875										
Transportation Allowance Landlord Contr Misc	0													0											0										
Landlord Contr Furnace	0													0											0										
Landlord Contr DHW	0													0											0										
Client Contr (Any) Lead Safe Work	0 43													0 10,129											236										

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

The total number of dwellings ma Dalhoff Associates, LLC

Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

impacts from continuous analysis and examine the continuous and examine the continuous and examine the continuous and examine the continuous analysis and examine the continuo

Total Reported Labor, Materials and Utility Admin Expenditures: \$1,157,134

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$1,157,134

	Num	hor of [wolling	e with	Impact	to	N	mhor c	f Dwalli	nae with	ı kWh Im	nacte				Billing A	djusted F	First-Year S	Savings				Avera	ge Billing ner Dw	Adjuste				ınd Savin	gs			
	Num	Dei Oi L	weiling	jo Willi	Fuel	ıs		eason	i Dweiii	iigs witi	I KVVII III	ipacis	Spending on Materials	Sum	nmer	Electricity Wi	inter	Annual		Gas Annual	Propane	Fuel Oil Othe	Spending on Materials		Ĕ	lectricit Win	ty		I Pk-Day	Gas Annual	Propan	Fuel Oil Othe	er.
Measure	Total	Electric	Gas	Propan	e Oil	Othe	er Coolii	ng Hea	ting				& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms		gallons Mbt			kWh	kW	kWh	kWh	therms	therms		gallons Mbtu	
Total Efficiency Measures	87	87	57	1	1 4		0 8	5	87				534,076	18.2		24.2		72,819	165	15,080	2,950	635	0 6,139	0.214		0.278		837	2.89	26	5 26	3 159 -	Ξ
Total Shell & Htg. Sys. Repl	87 87	87 87	57 57	1			0 8		87 87				446,135	16.1	18,795		30,643	49,438	158	13,927	2,784		0 5,128 0 3,067			0.239	352	568		24			_
Total Shell Measures Wall Insul	42	36	31	1	1 4		0 8		5				266,846 62,556	16.1	18,795 6.565		30,134 6.632	48,929 13,198	100 40				0 3,067		232 182	0.235	346 1,326	562 367	1.75	15 11			_
Open Blown Ceiling Insul	64	58	44		8 2				10				66,385	6.6	7,973	6.4	9,414	17,386	25	2,217	632		0 1,037	0.116	140	0.638	941	300			0 7	9 41 -	
Cavity Fill Insul Sloped Attic Insul	8 15	8 13	7 10		0 0 2 1			7 3	1 2				5,975 5,796	0.7 0.7	874 894		1,707 880	2,582 1,775	6	524 647			0 747 0 386		125 69	1.158 0.298	1,707 440	323 137	0.85		5 - 5 4		
Kneewall Insul	13	12	8		2 1			2	2				3,623	0.7	488		949	1,775	2				0 279			0.296	474				6 2		
Infil. Reduction	87	80	57	1	1 4		0 7		15				80,465	1.3	1,537	1.8	2,727	4,265	13		381	32	0 925	0.016	19	0.123	182	53	0.23		1 3		
Found./Crawl. Insul Bandjoist Insul.	40 44	17 5	30 32		3 2 5 2		0 1	5	5 5				10,155 7,192	1.0 0.0	1,182		1,243 1,140	2,425 1,140	4	332 313			0 254 0 163			0.169 0.155	249 228				1 1 0 1		
Furnace Blower Fan ¹	72	72	57	1			-		72				7,192	0.0	0		7,725	7,725	(0)				0 163	0.000		0.155	107	107	(0.01)		1) (
Exhaust Ventilation	30	30	17		4 1		-	10	30				24,699	-0.1	(719		(2,284)	(3,003) (1)			(5)	0 823			(0.052)						7) (5) -	
Total Heating System Repl	52	5	36		8 3	3	0 -		5				179,289	0.0	0	0.3	510	510	59	5,155	1,254	0.10	0 3,448	0.000		0.069	102		1.63	14	3 15	105 -	
Condensing Htg Sys Rep Non-Cond Htg Sys Repl	37 10	0	29		6 2 2 1		0 -		-				141,508 26.350	0.0	0		0	0	53 5	4,698 457			0 3,825 0 2.635		-	-	-	-	1.84 0.74	16	2 18 5 6		
Electric Htg Sys Repl	5	5	ó		0 0		0 -		5				11,431	0.0	0		510	510					0 2,286		- 0	0.069	102	102	- 0.74	-	-		
Heat Pump Repl	0	0	0		0 0)	0 -		0				0	0.0	0	0.0	0	0	0	0		0	0 0	-	- 1	-	-	-	-	-	-		
Other Htg Sys Repl	0	0	0		0 0)	0 -		0				0	0.0	0	0.0	0	0	0	0	0	0	0 0	-	-	•	-		-	-	-		_
							Num	ber of M	leasures	Installed	by Fuel T	yp€																					
	Total	Electric	Gas	Propar	Fuel ne Oil	Oth	er Tota	l Elec	tric G	as Pro	Fu pane O	٠.		Summer kW		Winter kW		Annual kWh	Pk-Day therms			Fuel Oil Other gallons Mbt	u	Summer kW	,	Winter kW			I Pk-Day therms	Annual therms		Fuel Oil Othe gallons Mbtu	
Water Heating	79	46	29		4 0		0 14	-	80	56	9	0 0	78,093	0.0		0.1		4,471		1,152	166	•	0 989	0.000		0.001		97	0.229	4	0 4		
Temp. Reduct. WH Wrap	0	0	0		0 0			0	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0	0	0 0	- 1				- :	1 :		1	- : :	
Pipe Insul.	76	45	27		4 0			6	45	27	4	0 0	476	0.0		0.0		1,910	0.3	112		ő	0 6	0.000		0.000		42	0.01		4		
LF Showerhead	3	2	1		0 0			3	2	1		0 0	26	0.0		0.0		350	0.0	.7		0	0 9	0.000		0.004		175	0.02		7 -		
Faucet Aerator Std-Eff Wtr Htr Repl.	20 0	14 0	5		1 0 0 0			.9 0	21	7		0 0	109	0.0		0.0		685 0	0.0			0	0 5	0.000		0.001		49	0.01		3		
Hi-Eff or Electric Wtr Htr Repl.	37	12	21		4 0		0 3	7	12	21	4	0 0	77,482	0.0		0.0		1,526	6.3			ő	0 2,094			0.003		127		4	9 3		
Lighting	49	49					47	•	477				2,193	1.5		2.8		14,332		-	-					0.057		292		-	_		_
Refrigerator/Freezer ³ Refrigerator Removal	8	8						9	9				7,656	0.6		0.5		4,578	-	-	-		957	0.070		0.066		572	-	-	-		
Refrigerator Exchange	7	7						7	7				6,658	0.4		0.0		3,510	1		1		951	0.062		0.058		501	1	- :		- 1 1	
Freezer Removal	0	0						0	0				0	0.0		0.0		0	-	-	-		. 0	-		-		-	-	-	-		
Freezer Exchange	2	2						2	2				998	0.1		0.1		1,068	-		<u> </u>		499	0.066		0.061		534	-		-		_
Total Non-Efficiency Measures	87												623,058										7,162										
Misc Ins,Attic Access/Veni Duct Sealing	75 21												21,480 6,115										286 291										
Duct Insulation	40												5,446										136										
Damming Material	62 32												3,710										60 382										
Htg. Sys. Tune & Clean Htg. Sys./WH Other	32 26												12,224 15,259										587										
Air Conditioning Work	0												0										0										
Water Heater Repair Refrigerator Coil Clean	6												1,293										216										
Waterbed Mattress Pad	0												0										0										
Programmable Tstat	0												0										0										
Unspecified Utility Meas CO Detector	0 79												3 932										0										
CO Detector Smoke Detector	79 40												3,932 674										50 17										
Fuses	1												336										336										
Htg Sys Safety Check Htg Sys Ventilation	5 38												2,275 16,201										455 426										
Water Heater Ventilation	16												2,925										183										
Bathroom Ventilation	38												6,319										166										
Dryer Ventilation Kitchen Ventilation	65 11												6,935 1,310										107 119										
Other Exhaust Ventilation	63												3,158										50										
Asbestos Removal (Minor)	0												0										0										
Health/Safety Repairs Health/Safety Other	62 12												110,487 850										1,782 71										
Consumables	0												0										0	ī									
General Repairs	81												95,599										1,180										
Meter Refrig (no action) Meter Freezer (no action)	80 36												0										0										
Support	83												292,625										3,526	1									
Transportation Allowance	0												0										0										
Landlord Contr Misc Landlord Contr Furnace	0												0										0										
Landlord Contr DHW	0												0										0										
Client Contr (Any	0												0										0										
Lead Safe Work Unspecifed/Other	70 0												13,905										199										

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$1,358,161

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$1,358,161

																											TOTALL	abor an	u waten	iai Expei	naitures:	\$1,350	,101		
	_						1										Billing A	Adjusted F	irst-Year S	Savings					Averag	e Billing	Adjust	ed First	t Year C	Costs a	ınd Savin	gs			
	N	umber	of Dwe	llings v	with Imp	pacts		Numbe	r of Dw	ellings	with kV	/h Impact	s													per Dw	elling R	eceivin	ng Meas	sures					
						F1		C					s	pending on	Sum		Electricity		A	Pk-Day	Gas Annual	l D	Fuel Oi		Spending on Materials	C		lectricit		A	I Pk-Day	as		F.	iel Oil Other
Measure	Total	Elect	ric G	as Pro	opane	Fuel Oil C	Other	Season Cooling H	eating				l a	Materials & Labor (\$)	kW	kWh	kW	inter kWh	Annual kWh		therms		gallons			Sumn kW	kWh	Win kW	kWh		therms	Annua therms			illons Mbtu
Total Efficiency Measures	107	' 1	07	99	6	0	0	107	107					824,688	22.5		11.5		58,136	191	19,423	1,683	0	0	7,707	0.210		0.107		543	1.93		196	280	
Total Shell & Htg. Sys. Repl	107			99	6	0	0	104	106					690,659	20.4	22,871	8.9	14,570	37,441	180			0			0.196		0.084	137	353				271	
Total Shell Measures Wall Insul.	107 81		06 74	99 76	6	0	0	104 74	106					467,694 159,074	20.4 8.7	22,871 10.489	8.9 0.0	14,447	37,317 10,489	110 55						0.196 0.118	220 142	0.084	136 0	352 142	1.11 0.73			190 103	
Open Blown Ceiling Insul	94			87	6	0	0	86	1					59,845	6.4	7,742	0.0	282	8,024	16					637	0.116		0.173	282					44	
Cavity Fill Insul	37			35	2	0	0	30	0					27,539	1.6	1,955	0.0	0	1,955	15	1,426	43			744	0.054	65	0.000	0		0.42			22	
Sloped Attic Insul Kneewall Insul	37 17			33 15	4	0	0	30 15	0					15,112 4,067	1.7 0.3	2,030 330	0.0	0	2,030 339	10					408 239	0.056 0.018	68 22	0.000	0	68 23			31 9	35 49	
Infil. Reduction	105	5	95	97	6	0	o	95	2					48,835	1.3	1,623	1.5	2,478	4,102	10				0	465	0.014	17	0.760	1,239	43	0.10		10	15	
Found./Crawl. Insul	53	3		46	5	0	0	12	2					41,778	0.6	723	0.3	501	1,224	5			0		788	0.050	60	0.154	251	94			10	12	
Bandjoist Insul. Furnace Blower Fan ¹	70 105			65 99	5 6	0	0		0 96					19,674 0	0.0	0	0.0 8.3	0 13,510	0 13,510	2 (0)					281	0.000	- 0	0.086	- 141	- 141	(0.00)		(0)	3 (1)	
Exhaust Ventilation	91			83	6	0	0	- 91	91					91.771	-0.2	(2.021)		(2.334)	(4.354						1.008	-0.003		(0.016)					(4)	(5)	
Total Heating System Repl	83	3	1	78	4	0	0	-	1					222,964	0.0	0	0.1	124	124	70	6,820	484	0		2,686	0.000		0.076	124		0.90			121	
Condensing Htg Sys Rep Non-Cond Htg Sys Repl	82		0	78 0	4 0	0	0	-	-					216,664 0	0.0	0	0.0	0	0	70 0					2,642	-	-	-	-	-	0.90		87	121	
Electric Htg Sys Repl	ď		0	0	0	0	0		- 0					0	0.0	0	0.0	0	0	0					0	-		-	-	-	1			-	
Heat Pump Repl	1		1	0	0	0	0	-	1					6,300	0.0	0	0.1	124	124	0		0			6,300	0.000	0	0.076	124	124	-		-	-	
Other Htg Sys Repl	C)	0	0	0	0	0		0					0	0.0	0	0.0	0	0	0	0	0	0	0	0	-	-	-	-	-	-		-	-	
						Fuel		Number o	f Measu	res Insta	lled by F				_							_				_		Winter						_	
	Total	Elect	ric G	as Pr			Other	Total E	lectric	Gas	Propan	Fuel Oil C	Other		Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms	gallons	Fuel Oil gallons			Summer kW		kW		Annual kWh	I Pk-Day therms	Annua therms			iel Oil Other
Water Heating	107	,	31	74	2	0	0	186	42	140	4	0	0	107,440	0.0		0.0		2,689	10.9	1,878				1,004	0.000		0.001			0.148			28	
Temp. Reduct. WH Wrap	0		0	0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0		0	0	0	0	-		-		-	-		-	-	
Pipe Insul.	107			74	2	0	0	107	31	74	2	ő	0	2,140	0.0		0.0		1,304	0.5			ď		20	0.000		0.000		42	0.01		2	3	
LF Showerhead	0		0	0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0					0	-		-		-	-		-	-	
Faucet Aerator Std-Fff Wtr Htr Repl			0	0	0	0	0	0	0	0	0	0	0	0	0.0		0.0		0	0.0			0		0	-		-		-			-	-	
Hi-Eff or Electric Wtr Htr Repl.	79		11	66	2	Ō	ō	79	11	66	2	ō	0	105,300	0.0		0.0		1,385	10.4	1,698		Ö		1,333	0.000		0.003		126			26	26	
Lighting Refrigerator/Freezer ³	91 23		91 23					649 25	649 25					4,579 22,010			1.0 1.5		5,352 12.654		<u> </u>	-	- :		50 957	0.006		0.011		59 550					<u> </u>
Refrigerator/Freezer Refrigerator Removal	23		0					0	25					22,010	0.0		0.0		12,654	-	- :	-	- :	- :	957	0.068		0.063		550	-			-	
Refrigerator Exchange	22	2	22					22	22					20,420	1.4		1.3		11,052	-	-	-	-	-	928	0.062		0.058		502			-	-	
Freezer Removal Freezer Exchange)	0					0	0					0 1.590	0.0		0.0		0 1.602	-	-	-	-	-	530	0.066		0.061		- 534	-		-	-	
	,								- 3					, , , , , ,			0.2		1,002						1	0.000		0.001		304	1 -				
Total Non-Efficiency Measures Misc Ins,Attic Access/Ven	107 102													533,473 15,027											4,986 147										
Duct Sealing	102													0											0										
Duct Insulation	57													4,774											84										
Damming Material Htg. Sys. Tune & Clean	70 77													1,911 20,457											27 266										
Htg. Sys./WH Other	21	l												12,450											593										
Air Conditioning Work Water Heater Repair	12													150 634											150 53										
Refrigerator Coil Clean	12													034											0										
Waterbed Mattress Pad	C													0											0										
Programmable Tstat Unspecified Utility Meas	0													0											0										
CO Detector	106	3												9,385											89										
Smoke Detector Fuses	106													6,374											60										
Htg Sys Safety Check	C)												0											0										
Htg Sys Ventilation	46	5												7,512											163										
Water Heater Ventilation Bathroom Ventilation	49 71													5,847 8,535											119 120										
Dryer Ventilation	65	5												5,334											82										
Kitchen Ventilation Other Exhaust Ventilation	83													354 3,380											118 41										
Asbestos Removal (Minor)	1													684											684										
Health/Safety Repairs	56													10,034 155											179										
Health/Safety Other Consumables	3													155											52 0										
General Repairs	54	ļ												19,995											370										
Meter Refrig (no action) Meter Freezer (no action)	88 25	-												0											0										
Support (no action)	107													376,647											3,520										
Transportation Allowance)												0											0										
Landlord Contr Misc Landlord Contr Furnace	0													0											0										
Landlord Contr DHW	ď													0											0										
Client Contr (Any)	C													0											0										
Lead Safe Work Unspecifed/Other	91													23,833											262 0										
Onopoulied/Other	, ,													U											U										

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

Dalhoff Associates, LLC

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures:

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$741,488

															Billing A	djusted F	irst-Year S	avings				Avera	ge Billing	Adjusted				nd Saving	ıs		
	Num	per of Dv	weilings		-				eiiings v	vitn kvv	h Impacts	Spending on			Electricity				Gas			Spending on	1	Ele	ectricity	ĭ	ı	G			
Measure	Total I	lectric	Gas Pr		Fuel Oil (Other 0	Seaso Sooling F					Materials & Labor (\$)	Sum kW	nmer kWh	kW Wi	nter kWh	Annual kWh	Pk-Day therms	Annual therms		Fuel Oil Ot gallons Mi		Sumn kW		Wint kW	ter . kWh		Pk-Day therms	Annual therms	Propane I gallons	uel Oil Other allons Mbtu
Total Efficiency Measures	57	57	43	10	0	0	57	57				410,419	17.9		11.0		48,886	97	8,897	2,480	0	0 7,200	0.314		0.194		858	2.25	207	248	
	57	57	43	10	0	0	56	57				331.079	16.2	18.547	8.5	12,327	30.874	91	7.839	2 445	0	0 5.808			0.150	216	542	2.12	182		
Total Shell & Htg. Sys. Repl Total Shell Measures	57	57	43	10	0	0	56	57				172,101	16.2	18,547	8.5	12,327	30,874	38	3,302	1,244	0	0 5,800			0.150	215	542	0.89	182 77		
Wall Insul.	38	34	29	6	0	0	34	3				45,837	6.2	7,487	1.7	2,527	10,014	17	1,485	355	0	0 1,206			0.583	842	295	0.59	51	59	
Open Blown Ceiling Insul	52	48	40	8	0	0	48	4				37,982	6.5	7,872		4,982	12,854	10	881	582	0	0 730	0.136	164	0.862	1,245	268	0.26	22		
Cavity Fill Insul Sloped Attic Insul	6 20	6 18	4 14	1	0	0	6 18	1 2				3,000 7,861	0.5 1.5	565 1,764	0.1 0.9	136 1,254	700 3,018	1 5	88 413	19 131	0	0 500	0.078		0.094 0.434	136 627	117 168	0.25 0.34	22 30	19 33	
Kneewall Insul	12	11	8	3	0	0	11	1				2,691	0.2	244		184	429	0	35	16	0	0 224			0.434	184	39	0.05	4	5	
Infil. Reduction	57	53	43	10	ő	ő	53	4				32,922	1.2	1,446		461	1,907	5	462	156	Ö	0 578			0.080	115	36	0.12	11		
Found./Crawl. Insul	17	4	14	2	0	0	3	1				5,402	0.2	280		85	365	1	81	11	0	0 318			0.059	85	91	0.07	6		
Bandjoist Insul.	25	1	18	6	0	0	-	1				2,053	0.0	0		26	26	1	51	21	0	0 82		-	0.018	26	26	0.03	3		
Furnace Blower Fan ¹ Exhaust Ventilation ²	53 50	52	43 39	10	0	0	-	52 50				0 34.352	0.0 -0.1	0		4,182	4,182	(0)	(13)		0	0 68	0.000		0.056	80 (32)	80 (54)	(0.00)	(0)		
Total Heating System Repl	43	50	39	8	0	0	50	50				158,978	0.0	(1,112)		(1,582) 72	(2,694)	(2) 53		(41) 1,201	0	0 3,697			0.022)	72	(54)	1.55	133	(5) 150	
Condensing Htg Sys Rep	41	0	34	7	0	0	-	-				139,220	0.0	0		0	0	53	4,537	1,119	0	0 3,396		-	-		-	1.55	133	160	
Non-Cond Htg Sys Repl	1	0	0	1	0	0	-	-				2,370	0.0	0	0.0	0	0	0	0	82	0	0 2,370	-	-	-	-	-	-	-	82	
Electric Htg Sys Repl	1	1	0	0	0	0	-	1				17,388	0.0	0		72	72	0	0	0	0	0 17,388	0.000		0.050	72	72	-	-	-	
Heat Pump Repl Other Htg Sys Repl	0	0	0	0	0	0	-	0				0	0.0	0		0	0	0	0	0	0	0 0	-	-	-	-	-	-	-	-	1 1
Other ring dys reepi	-	- 0	- 0	-		- 0		- 0				Ů	0.0	- 0	0.0	- 0					- 0	,	-				_			-	
					.		Number	of Measu	ıres Instal	led by Fu	el Type						•	Di D	•		F1 671 - 5							DI . D			
	Total I	lectric	Gas P		Fuel Oil	Other	Total E	Electric	Gas	Propane	Oil Othe		Summer kW		Winter kW		Annual kWh	Pk-Day therms	therms		Fuel Oil Oth gallons Mi		Summer		Vinter kW			Pk-Day therms	Annual therms		uel Oil Other allons Mbtu
Water Heating	53	18	33	2	0	0	161	46	109	6		67,033	0.0		0.0		2,646	5.9		35	0	0 1,26	0.000		0.003			0.179	32	17	
Temp. Reduct.	0	0	0	0	0	0	0	0	0	0		0	0.0		0.0		0	0.0	0	0	0	0 (-		-		-	-	-	-	
WH Wrap Pipe Insul.	0 46	0 16	0 28	0	0	0	0 46	0 16	0 28	0	0	, , ,	0.0		0.0		677	0.0 0.2	0 73	0	0	0 0	0.000		0.000		42	0.01	- 3	- 3	: :
LF Showerhead	14	3	11	0	0	o	14	3	11	0	0		0.0		0.0		521	0.2	70	0	0	0 10			0.004		174	0.02	6	-	
Faucet Aerator	43	15	26	2	0	0	66	21	42	3	0	330	0.0		0.0		683	0.2	52	4	0	0	0.000		0.001		46	0.01	2	2	
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0	0 35	0	0	0	0		0.0		0.0		0	0.0	0	0	0	0 (-		-		-	-	-	-	
Hi-Eff or Electric Wtr Htr Repl. Lighting	35 43	43	28	1	U	U	456	456	28	1	U	0 65,673 3.386	0.0		0.0 1.7		766 8.717	5.3	862	25	- 0	0 1,876			0.003		128 203	0.19	31	25	
Refrigerator/Freezer ³	11	11					13	13				8,921	0.8		0.8		6,649	-		-	-	- 81			0.070		604	-		-	
Refrigerator Removal	0	0					0	0				0	0.0		0.0		0	-	-	-	-	- (-		-		-	-	-	-	
Refrigerator Exchange	9	9					9	9				7,092	0.6		0.5		4,513	-	-	-	-	- 788	0.062		0.058		501	-	-	-	
Freezer Removal Freezer Exchange	0	0					0	0				0 1,829	0.0		0.0 0.2		0 2,136	- 1				- 610	0.088		0.082		- 712		- :	- 1	: :
													0.0		0.2		2,100			l					0.002						
Total Non-Efficiency Measures Misc Ins.Attic Access/Ven	57 56											331,069 10.913										5,80 8									
Duct Sealing	19											5,701										300									
Duct Insulation	49											2,463										50									
Damming Material	38											1,244										33	1								
Htg. Sys. Tune & Clean	17											3,705										218									
Htg. Sys./WH Other Air Conditioning Work	11 0											10,548										959									
Water Heater Repair	2											259										130									
Refrigerator Coil Clean	0											0																			
Waterbed Mattress Pad	0											0)								
Programmable Tstat Unspecified Utility Meas	0											0																			
CO Detector	37											766										2	4								
Smoke Detector	17											1,076										60	3								
Fuses	0											0										()								
Htg Sys Safety Check Htg Sys Ventilation	0 42											0 11,679										278									
Water Heater Ventilation	28											6,333										226									
Bathroom Ventilation	50											4,758																			
Dryer Ventilation	28											2,058										98 73	3								
Kitchen Ventilation Other Exhaust Ventilation	10 53											688 1,491										69	2								
Other Exhaust Ventilatior Asbestos Removal (Minor)	53											1,491										28									
Health/Safety Repairs	42											16,417										39									
Health/Safety Other	3											49										16	i								
Consumables	0 57											0										505)								
General Repairs Meter Refrig (no action)	46											28,793										505	3								
Meter Freezer (no action)	23											0											i i								
Support	56											204,850										3,658	1								
Transportation Allowance	0											0											2								
Landlord Contr Misc Landlord Contr Furnace	0											0											(
Landlord Contr Purnace Landlord Contr DHW	0											0										- 1	il								
Client Contr (Any	0											0																			
Lead Safe Work Unspecifed/Other	41											17,279										42	J								
Unspecified/Other	ii 0																														

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of mes Dalhoff Associates, LLC

Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

impacts from communities from continuous constant ratio required by ASHINGLE CL. I not written impacts exceed summer occasion required specific required by ASHINGLE CL. I not written impacts exceed summer occasion replaces for occurrence association required by ASHINGLE CL. I not written impacts exceed summer occasion required production of the product

Total Reported Labor, Materials and Utility Admin Expenditures: \$678,130

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$678,130

	Numl	er of Dw	ennillar	with Im	nnacte		Numb	ar of Dv	ellings :	with kW	h Impacts				Billing	Adjusted	First-Year S	Savings				Avera	ge Billing per Dv	g Adjust velling F				ınd Saviı	ngs			
			·go		-				ogo		puoto	Spending on			Electricit				Gas			Spending on	l [']		Electrici	ty			Gas	1		
Measure	Total E	lectric	Gas P	ropane	Fuel Oil	Other C	Sease cooling					Materials & Labor (\$)	Sui kW	mmer kWh	kW V	Vinter kWh	Annual kWh	Pk-Day therms	Annual therms	Propar	ne Fuel Oil Othe s gallons Mbt	materials u & Labor (\$)	Sumr kW	mer kWh	Wir kW	nter kWh	Annua kWh	I Pk-Day therms	Annua therms	Prop	ane Fu	ol Oil Other Ions Mbtu
																					•											
Total Efficiency Measures	45	45	37	2	1	0	45	45				399,270	12.3		13.6		52,643	125	12,026	6 62	7 206	0 8,873	0.273		0.303		1,170	3.39		325	313	206 -
Total Shell & Htg. Sys. Repl Total Shell Measures	45 45	45 45	37 37	2	1	0	45 45	45 45				332,667 202,326	9.7 9.7	11,005			26,817 26,718	120 68				0 7,393 0 4.496		245 245	0.230						290 158	206 -
Wall Insul.	20	19	17	1	0	0	19	2				28,227	2.8	3,333			4,051					0 1,411		175	0.235					90	32	
Open Blown Ceiling Insul	44	43	36	2	1	0	43	5				60,190	4.8	5,767	4.3	6,606	12,373	28	2,593	3 9	4 86	0 1,368	0.111	134	0.864	1,321	288	0.79		72	47	86 -
Cavity Fill Insul Sloped Attic Insul	9	9	5	1	0	0	9	3				8,292 5,093	0.8	946 494		3,336 0	4,282 494	4 5	369 438		3 0	0 921 0 637	0.087	105 71	0.727	1,112 0		0.81		74 55	83	
Kneewall Insul	8	7	8	0	0	0	7	0				11,750	0.4	181		0	181		207		0 0	0 1,469		26	0.000	0				26		: :
Infil. Reduction	40	39	32	2	1	ō	39	5				16,431	0.7	788	3 0.2		1,159	10	942	2 5		0 411	0.017	20	0.049	74	30	0.32		29	27	26 -
Found./Crawl. Insul	16	4	13	2	1	0	4	0				21,935	0.2	298			298				5 7	0 1,371	0.062	75	0.000	0	75	0.19		17	23	7 -
Bandjoist Insul. Furnace Blower Fan ¹	18 40	0 40	16 37	2	0	0		0 40				7,114	0.0	(0 6,110	1 (0)	92			0 395	- 0.000	- 0	- 0.400	- 452	- 450	0.06		6	8	(0) -
Exhaust Ventilation	40 36	40 36	30	1	1	0	36	40 36				43,295	0.0 -0.1	(802							1) (0) 7) (5)	0 1,203	0.000	0 (22)	0.100 (0.026)					(1) (6)	(1) (7)	(0) - (5) -
Total Heating System Repl	34	1	30	2	1	0	-	1				130,341	0.0									0 3,834			0.065						131	92 -
Condensing Htg Sys Rep	33	0	30	2	1	0	-	-				126,341	0.0	(0	0		4,743	3 26	3 92	0 3,829	-	-	-	-	-	1.73		158	131	92 -
Non-Cond Htg Sys Repl	0	0	0	0	0	0	-	- 0				0	0.0	(0	0	(-	0 0	0 0	-	-	- :	-	-	-			:	
Electric Htg Sys Repl Heat Pump Repl	1	1	0	0	0	0		1				4,000	0.0	(99			(-	0 0	0 4,000	-	- 0	0.065	99	99					: :
Other Htg Sys Repl	Ö	Ö	Ö	ő	0	Ö	-	o o				0	0.0	Č		0	0	0		Ö	0 0	0 0	-	-	-	-	-	-			-	
							Manakaa	M	ıres Insta		al Toma																					
					Fuel		Nullibei	UI WIEGS	iies iiista	neu by r	Fuel		Summer		Winter		Annual	Pk-Day	Annual	Propan	e Fuel Oil Othe	,	Summer		Winter		Annua	l Pk-Day	Annua	Prop	ane Fu	el Oil Other
W-4			Gas P	ropane			Total		Gas	Propane		er	kW		kW		kWh	therms	therms	gallon	s gallons Mbt	u .	kW		kW		kWh	therms	therms			lons Mbtu
Water Heating Temp. Reduct.	45 0	16 0	28	1	0	0	119 0	38	78 0	3	0	0 45,440	0.0		0.1		3,629	5.9 0.0	1,111	1 4	7 0	0 1,010	0.000		0.005		- 227	0.209		40	47	
WH Wrap	ő	0	ő	ő	0	0	ō	ő	0	ő	0	0 0	0.0		0.0		0	0.0	Č	0	0 0	0 0	-		-		-	-			-	1 1
Pipe Insul.	42	14	28	0	0	0	42	14	28	0	0	0 800	0.0		0.0		596		104		0 0	0 19	0.000		0.000		43			4		
LF Showerhead Faucet Aerator	35 6	11 2	23 3	1	0	0	44	13 3	30 3	1	0	0 440 0 35	0.0		0.0		1,914 97		207		0 0 2	0 13	0.000		0.004		174 48			9	10 2	
Std-Eff Wtr Htr Repl.	0	0	0	Ó	0	0	ó	0	0	ó	0	0 0	0.0		0.0		0	0.0	Č		0 0	0	- 0.000		-		-	- 0.01		2	- 2	: :
Hi-Eff or Electric Wtr Htr Repl.	26	8	17	1	Ō	ō	26	8	17	1	Ō	0 44,165	0.0		0.0		1,022	4.9	794	4 3	5 0	0 1,699			0.003		128			47	35	
Lighting	43	43					461	461				3,315			1.6		8,492		-	-					0.038		197				-	
Refrigerator/Freezer ³ Refrigerator Removal	24 0	24					27	27				17,848	1.7 0.0		1.6		13,706			-			0.070		0.066		571	-			-	
Refrigerator Exchange	24	24					25	25				16,766	1.6		1.5		12,616					699	0.065		0.060		526	-			1	: :
Freezer Removal	0	0					0	0				0	0.0		0.0		0	-	-	-		. 0	-		-		-	-			-	
Freezer Exchange	2	2					2	2				1,082	0.1		0.1		1,089	-	-	-	-	541	0.067		0.063		545	-			-	
Total Non-Efficiency Measures	45											278,860										6,197										
Misc Ins,Attic Access/Ven	38											13,469										354										
Duct Sealing Duct Insulation	6											735 397										123 132										
Damming Material	16											885										55										
Htg. Sys. Tune & Clean	7											2,350										336										
Htg. Sys./WH Other Air Conditioning Work	18 0											6,515										362										
Water Heater Repair	6											1,742										290										
Refrigerator Coil Clean	0											0										0										
Waterbed Mattress Pad	0											0										0										
Programmable Tstat Unspecified Utility Meas	0											0																				
CO Detector	44											4,430										101										
Smoke Detector Fuses	34 0											4,505 0										133										
Htg Sys Safety Check	0											0										0										
Htg Sys Ventilation	4											1,375										344										
Water Heater Ventilation	4											1,260										315										
Bathroom Ventilation Dryer Ventilation	2 23											610 4,825										305 210										
Kitchen Ventilation	0											0										0										
Other Exhaust Ventilation	3											3,415										1,138										
Asbestos Removal (Minor) Health/Safety Repairs	0 32											13,240										414										
Health/Safety Other	1											75										75										
Consumables	0											0 007										0	Ī									
General Repairs Meter Refrig (no action)	36 23											29,927										831	ł									
Meter Freezer (no action)	12											Ö																				
Support	45											189,105										4,202										
Transportation Allowance Landlord Contr Misc	0											0										0										
Landlord Contr Misc	0											0																				
Landlord Contr DHW	0											0										0										
Client Contr (Any) Lead Safe Work	0											0										1 0	1									
Unspecifed/Other	0											0																				

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

The total number of dwellings ma Dalhoff Associates, LLC

mpacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed

Total Reported Labor, Materials and Utility Admin Expenditures: \$2,608,134

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$2,608,134

																					Total La					42 ,000,10			
	Number of I	Dwellings wi	ith Imnaci	ıto.	Numbo	r of Dwalli	ngo with	kWh Impacts			E	Billing A	djusted F	irst-Year S	avings				Avera	ge Billing	Adjusted elling Re				Savings	S			
	Number of t	Dweilings wi	itii iiiipac	.15	Number	or Dweili	ilys with	KVVII IIIIPACIS	Spending on		E	lectricity				Gas			Spending on			ectricity		- 1	Ga	s	I		
Measure	Total Electric	Gas Prop	Fuel ane Oil		Seasor Sooling H				Materials & Labor (\$)	Sum kW	nmer kWh	Wir kW	nter kWh	Annual kWh	Pk-Day therms	Annual therms		Fuel Oil Other		Sumn kW		Winte	er A kWh	nnual Pi kWh th	c-Day erms	Annual therms		Fuel Oil Oth	
Total Efficiency Measures	192 192	•			192	192				45.1		36.2		138.804			176					0.189							
		-							1,496,354									0	.,						2.93	278			_
Total Shell & Htg. Sys. Repl Total Shell Measures	192 192 192 192	184 184	1 0	0 0	192 192	192 192			1,202,335 904,337	39.5 39.5	44,104 44,104	28.7 28.7	42,763 42,763	86,867 86,867	504 351	44,925 31,281	140 77		0 6,262 0 4,710			0.150 0.150	223 223		2.74 1.91	244 170			
Wall Insul.	124 100	123	0 0		100	1			238,939	15.2	18,298	1.9	2,776	21,075	98	8,659	0		0 1,927	0.152			2,776		0.79	70			_
Open Blown Ceiling Insul	166 139	159		0 0	138	7			171,589	15.6	18,795	5.7	8,490	27,284	147	13,150	0	-	0 1,034				1,213		0.93	83			
Cavity Fill Insul Sloped Attic Insul	110 90 50 40	105 49	0 0		89 40	5 1			49,696 23,837	2.4 1.4	2,904 1,727	0.9 0.4	1,314 654	4,218 2,380	29 17	2,561 1,523	0	-	0 452 0 477	0.027 0.036		0.176 0.445	263 654		0.27	24 31		- : :	
Kneewall Insul	59 52		0 0		52	1			23,883	1.1	1,361	0.6	815	2,176	13		0	Ö	0 405			0.555	815		0.23	20	-		
Infil. Reduction Found./Crawl. Insul	192 163		1 0		162 21	7			183,724	2.9	3,548 1.648	0.6 0.1	817 88	4,365	31	2,746	27 57	0	0 957 0 873	0.018		0.079 0.060	117		0.17	15			
Bandjoist Insul.	88 22 3 0	3	0 0		- 21	0			76,816 318	0.0	1,648	0.1	88	1,736 0	28 0	2,515 9	0	0	0 873	0.065	78	0.060	- 88		0.32	29 3			
Furnace Blower Fan ¹	185 185	184	1 0	0 0	-	185			0	0.0	0	22.2	33,082	33,082	(1)	(129)	(1)	0	0 0	0.000	0	0.120	179		(0.01)	(1			
Exhaust Ventilation	188 188	180	1 0	-	188	188			135,535	-0.5	(4,177)	(3.5)	(5,273)	(9,450)			(6)	0	0 721		(22) (0.019)	(28)		(0.06)	(5)			
Total Heating System Repl Condensing Htg Sys Rep	133 0 115 0	132 115	0 0	0 0	-	0			297,998 258,884	0.0	0	0.0	0	0	153 143	13,644 12,740	63	0	0 2,241 0 2,251	-	-	÷	-	-	1.16	103 111			_
Non-Cond Htg Sys Repl	18 0	17	1 0	0 0	-				39,115	0.0	0	0.0	ő	0	10	904	63	0	0 2,173	-	1		-	-	0.59	53			
Electric Htg Sys Repl	0 0		0 0	0 0	-	0			0	0.0	0	0.0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-		
Heat Pump Repl Other Htg Sys Repl	0 0	0	0 0		-	0			0	0.0	0	0.0	0	0	0	0	0	0	0 0	-	-	1		-	:	-	1	- : :	
					Number -	f Measures	Installed 5	v Eugl Type																					_
			Fuel	1				Fuel		Summer		Winter		Annual	Pk-Day			Fuel Oil Othe		Summer		Vinter		nnual Pi		Annual		Fuel Oil Oth	
Water Heating	Total Electric		ane Oil		Total E	lectric G	as Propa 605	ane Oil Other		kW		kW		kWh 2.873	therms 34.9	therms 6.248	gallons	gallons Mbt	u 0 1.340	kW 0.000		kW 0.003		180 th	erms	therms 36	gallons 36	gallons Mb	tu
Temp. Reduct.	0 0	0	0 0	-	0	0	0	0 0 0	0 0	0.0		0.0		0	0.0	0,240	0	0	0 0	-		-		-	-	-	-	- : :	_
WH Wrap	0 0	0 166	0 0		0	0		0 0 0		0.0		0.0		0	0.0	0 488	0	0	0 0 16	-		-		- 43	-	-			
Pipe Insul. LF Showerhead	183 16 44 4	40	0 0		183 47		166 43	1 0 0	2,876	0.0		0.0		683 693	1.4	488 285	3	0	0 16	0.000		0.000		173	0.01	3			
Faucet Aerator	147 14	133		0 0	279			0 0 0	1,248	0.0		0.0		983	1.1	346	0	Ō	0 8	0.000		0.002		70	0.01	3	-		
Std-Eff Wtr Htr Repl. Hi-Eff or Electric Wtr Htr Repl.	0 0 153 4	0 148	0 0		0 153	0	0 148	0 0 0	250,018	0.0		0.0		0 514	0.0 31.4	5,129	0 33	0	0 0 0 1,634	0.000		0.003		- 128	0.21	- 35	- 33		
Lighting	158 158			0	1,491	1,491	140	, ,	10,654	2.4		4.4		22,763	-		-		67			0.028			-	-	-		_
Refrigerator/Freezer ³	47 47				52	52			28,797	3.2		3.0		26,302	-	-	-	-	613	0.069		0.064		560	-	-	-		_
Refrigerator Removal Refrigerator Exchange	0 0 45 45				0 45	0 45			26,244	0.0 2.8		0.0 2.6		22,564	- 1		-	-	583	0.062		0.058		501	-		1	- : :	
Freezer Removal	0 0				0	0			0	0.0		0.0		0	-	-	-	-	0	-		-		-	-	-	-		
Freezer Exchange	7 7				7	7			2,553	0.5		0.4		3,738	-		-	-	365	0.066		0.061		534	•		-		
Total Non-Efficiency Measures	200								1,111,780										5,559										
Misc Ins,Attic Access/Veni Duct Sealing	180 83								68,262 16,638										379 200										
Duct Insulation	179								15,423										86										
Damming Material Htg. Sys. Tune & Clean	124 43								14,698 17,662										119 411										
Htg. Sys./WH Other	43								15,572										362										
Air Conditioning Work	0								0										0										
Water Heater Repair Refrigerator Coil Clean	0								100 0										100										
Waterbed Mattress Pad	0								0										0										
Programmable Tstat Unspecified Utility Meas	0								0										0										
CO Detector	176								10,420										59										
Smoke Detector Fuses	109 0								4,193 0										38										
Htg Sys Safety Check	0								0										0										
Htg Sys Ventilation	114								24,352										214										
Water Heater Ventilation Bathroom Ventilation	109 190								20,961 38,309										192 202										
Dryer Ventilation	175								24,124										138										
Kitchen Ventilation	18								2,038										113										
Other Exhaust Ventilatior Asbestos Removal (Minor)	3								56 0										19										
Health/Safety Repairs	168								89,224										531										
Health/Safety Other Consumables	88								11,229										128	1									
General Repairs	187								158,908										850										
Meter Refrig (no action) Meter Freezer (no action)	129 51					-			0				-						0										
Support (no action)	146								555,877										3,807	1									
Transportation Allowance	0								0										0										
Landlord Contr Misc Landlord Contr Furnace	0								0										0										
Landlord Contr DHW	0								0										0										
Client Contr (Any) Lead Safe Work	0 135								23,734										176	1									
Lead Sate Work Unspecifed/Other	135								23,734										1/6										

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

Dalhoff Associates, LLC

Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

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4.20 Dalhoff Associates, LLC

5. DETAILED SPENDING AND IMPACT PROFILES BY AGENCY FOR UTILITY EXPENDITURES

This section provides tables of spending and impacts by agency for utility expenditures.

Dalhoff Associates, LLC 5.1

Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$242,062

	Numbe	er of Dwe	llinas	Number	of Dwellings				Billing A	Adjusted F	irst-Year S	avings		Averaç			ted Firs			nd Savin	gs
		with Impac			tricity Impacts	Spending on		E	Electricity				Gas	Spending on	•		Electricit	y			as
Measure	Total	Electric	Gas	Seas Cooling		Materials & Labor (\$)	Sum kW	mer kWh	kW W	inter kWh	Annual kWh	Pk-Day therms	Annual therms	Materials & Labor (\$)	Sum kW	mer kWh	Win kW	ter kWh	Annual kWh	Pk-Day therms	Annual therms
Total Efficiency Measures	47	41	34	41	41	206,625	8.7		10.2		31,826	66	6,283	4,396	0.212		0.248		776	1.94	185
Total Shell & Htg. Sys. Repl	45	40	33	34	40	162,340	7.7	9,310	8.8	13,436	22,747	62	5,658	3,608	0.227	274	0.220	336	569	1.88	171
Total Shell Measures	44	39	33	34	39	90,625	7.7	9,310	8.7	13,284	22,594	37	3,399	2,060	0.227	274	0.223	341	579	1.13	103
Wall Insul.	20	16	16	16	1	23,963	2.2	2,629	0.1	211	2,840	9	840	1,198	0.136	164	0.138	211	178	0.58	53
Open Blown Ceiling Insul. Cavity Fill Insul.	41 15	35 11	31 13	34 11	6 2	27,252 14,882	2.6 0.7	3,106 862	4.4 1.5	6,771 2,345	9,877 3,207	8	711 758	665 992	0.076	91 78	0.738	1,128 1,173	282 292	0.25	23 58
Sloped Attic Insul.	15		11	13	1	7,802	0.7	1,116	0.2	300	1,416	5	758 425	520	0.065	86	0.767	300	109	0.64	39
Kneewall Insul.	15		12	11	2	4,302	0.4	482	0.1	146	628	3	249	287	0.036	44	0.048	73	57	0.23	21
Infil. Reduction	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Found./Crawl. Insul.	23		17	15	5	9,569	0.9	1,114	1.2	1,829	2,943	2	204	416	0.062	74	0.239	366	164	0.13	12
Bandjoist Insul.	18		15	-	3	2,855	0.0	0	0.1	186	186	2	221	159	0.000	0	0.041	62	62	0.16	15
Furnace Blower Fan	38		33	-	33	0	0.0	0	1.0	1,496	1,496	(0)		0	0.000	0	0.030	45	45	(0.00)	(0)
Exhaust Ventilation	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-		-	-	-	
Total Heating System Repl	25	2	23	-	2	71,714	0.0	0	0.1	152	152	25 25	2,258	2,869	0.000	0	0.050	76	76	1.08	98
Condensing Htg Sys Repl Non-Cond Htg Sys Repl	23 0	0	23		-	64,714 0	0.0	0	0.0	0	0	25	2,258 0	2,814	-		-	-		1.08	98
Electric Htg Sys Repl	2		0		2	7,000	0.0	0	0.0	152	152	0	0	3,500	0.000	- 0	0.050	76	76		
Heat Pump Repl	0		0	-	0	0	0.0	0	0.0	0	0	0	0	0	-		-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	
	Total	Electric	Gas	by	per of Measures Fuel Type Electric Gas		Summer		Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms
Water Heating	27	5	22	21	4 17	38,041	0.0		0.0		505	3.8	625	1,409	0.000		0.002		101	0.174	28
Temp. Reduct.	0	0	0	0	0 0		0.0		0.0		0	0.0	0	0	-		-		-	-	-
WH Wrap	0	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Pipe Insul.	0	0	0	0	0 0		0.0		0.0		0	0.0	0	0	-		-		-	-	-
LF Showerhead	0	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Faucet Aerator Std-Eff Wtr Htr Repl.	0	0	0	0	0 0		0.0 0.0		0.0		0	0.0	0	0	-		-		-	-	-
Hi-Eff or Electric Wtr Htr Repl.	27	5	22	21	4 17		0.0		0.0		505	3.8	625	1,409	0.000		0.002		101	0.17	28
Lighting	38	38		220	220	976	0.5		0.9		4,727	-	-	26	0.013		0.024		124	-	-
Refrigerator/Freezer ³	8	8		7	7	5,268	0.5		0.4		3,847	-	-	658	0.059		0.055		481		-
Refrigerator Removal	0	0		0	0	0	0.0		0.0		0	-	-	0	-		-		-		-
Refrigerator Exchange	5			4	4	3,710	0.3		0.3		2,245	-	-	742	0.055		0.052		449	-	-
Freezer Removal Freezer Exchange	0	0		0	0 3	0 1,558	0.0 0.2		0.0 0.2		0 1,602	-	-	0 519	0.066		0.061		534	-	-
Treezer Exchange		- 3		3	3	1,556	0.2		0.2		1,002			519	0.000		0.001		334		
Total Non-Efficiency Measures	47					35,437								754							
Misc Ins,Attic Access/Vent	0					0								0							
Duct Sealing	0					0								0							
Duct Insulation	0					0								0							
Damming Material	0 7					0 835								0 119							
Htg. Sys. Tune & Clean Htg. Sys./WH Other	0					0								119							
Air Conditioning Work	0					ő								o o							
Water Heater Repair	0					0								0							
Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat Unspecified Utility Meas.	0					0								0							
CO Detector	0					0								0							
Smoke Detector	0					ő								ő							
Fuses	0					0								0							
Htg Sys Safety Check	0					0								0							
Htg Sys Ventilation	21					4,774								227							
Water Heater Ventilation Bathroom Ventilation	22 0					4,336 0								197							
Dryer Ventilation	0					0								0							
Kitchen Ventilation	0					ő								ő							
Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor)	0					0								0							
Health/Safety Repairs	27					38,041								1,409							
Health/Safety Other	0					0								0							
Consumables General Repairs	0					0								0							
Meter Refrig (no action)	0					0								0							
Meter Freezer (no action)	0					0								0							
Support	46					25,492								554							
Transportation Allowance	0					0								0							
Landlord Contr Misc	0					0								0							
Landlord Contr Furnace Landlord Contr DHW	0					0								0							
Client Contr (Any)	0					0								0							
Lead Safe Work	0					0								0							
Unspecifed/Other	0					0								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the tillity partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$638,145

	II.								Billing A	Adjusted F	irst-Year S	avings		Avera	ge Billing					nd Savin	gs
		er of Dwe with Impac			of Dwellings tricity Impacts	Spending on			Electricity				Gas	Spending on	per Dw		Receiving Electricity	Ţ			ias
Measure	Total	Electric	Gas	Seas Cooling		Materials & Labor (\$)	Sum kW	nmer kWh	kW	inter kWh	Annual kWh	Pk-Day therms	Annual therms	Materials & Labor (\$)	Sumr kW	ner kWh	Wint kW			Pk-Day therms	Annual therms
Total Efficiency Measures	126	109	97	104	109	544,200	13.2		7.2		42,338	212	20,638	4,319	0.127		0.066		388	2.18	213
Total Shell & Htg. Sys. Repl	116	92		68	92	429,545	10.7	12,949	4.1	6,270	19,219	197	18,069	3,703		190	0.044	68	209	2.09	192
Total Shell Measures	116	92		68	92	285,962	10.7	12,949		6,270	19,219	111	10,003	2,465		190	0.044	68	209	1.18	109
Wall Insul.	48	39		39	1	105,388	4.4	5,265	0.6	850	6,115	32	2,908	2,196	0.112	135	0.552	850	157	0.85	79
Open Blown Ceiling Insul.	63	50		50	1	50,559	4.3	5,131	0.1	144	5,275	39	3,595	803	0.085	103	0.093	144	105	0.81	75
Cavity Fill Insul.	14	8		8	0	18,670	0.4	487	0.0	0	487	9	864	1,334	0.050	61	0.000	0	61	0.72	66
Sloped Attic Insul.	19	15	16	15	0	12,124	0.6	722		0	722	6	575	638	0.040	48	0.000	0	48	0.39	36
Kneewall Insul.	19	17		17	0	7,615	0.4	521	0.0	0	521	4	359	401	0.025	31	0.000	0	31	0.23	21
Infil. Reduction Found./Crawl. Insul.	13 59	5 14		5 13	1	4,753 78,954	0.0 0.6	42 781		140 403	182 1,184	18	136 1,656	366 1,338	0.007 0.050	8 60	0.091 0.262	140 403	36 85	0.12	11 31
Bandjoist Insul.	36	1	35	-	1	7,898	0.0	0		130	130	2	176	219		0	0.202	130	130	0.05	5
Furnace Blower Fan ¹	114	90			90	0	0.0	0		4,603	4,603	(0)	(30)	213	0.000	0	0.033	51	51	(0.00)	(0)
Exhaust Ventilation	0	0		0	0	0	0.0	0		7,000	4,000	0	(00)	0	0.000	·	0.000	01	٥.	(0.00)	(0)
Total Heating System Repl	63			U	0	143,583	0.0	0		0	0	85	7,831	2,279	-				-	1.35	124
Condensing Htg Sys Repl	63	0	63	-	-	143,583	0.0	0		0	0	85	7,831	2,279	-	-		-	-	1.35	124
Non-Cond Htg Sys Repl	0	0		-	-	0	0.0	0		Ō	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0			-	0	0	0.0	0		0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0			-	0	0	0.0	0		0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
					per of Measures Fuel Type		Summer		Winter		Annual	Pk-Day	Annual		Summer		Winter		nnual	Pk-Day	Annual
	Total	Electric		Total	Electric Gas		kW		kW		kWh	therms	therms		kW		kW		kWh	therms	therms
Water Heating Temp. Reduct.	92	22		154 0	30 123 0 0		0.0		0.0		2,082	15.0	2,569	1,053			0.001		95	0.215	37
Temp. Reduct. WH Wrap	0	0		0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Pipe Insul	87	21		87	21 66		0.0		0.0		883	0.6	219	18	0.000		0.000		42	0.01	- 3
LF Showerhead	0	0		0	0 0	1,037	0.0		0.0		0	0.0	0	0	- 0.000		-		- 72	-	-
Faucet Aerator	0			0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Std-Eff Wtr Htr Repl.	0	0		0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Hi-Eff or Electric Wtr Htr Repl.	71	10		67	9 57	95,235	0.0		0.0		1,199	14.4	2,350	1,341	0.000		0.003		120	0.24	39
Lighting	85	85		643	643	4,725	0.9		1.6		8,323	-	-	56			0.019		98	-	-
Refrigerator/Freezer ³	25			25	25	13,098	1.6		1.5		12,714	-	-	524	0.063		0.058		509	-	-
Refrigerator Removal Refrigerator Exchange	0 18	0 18		0 18	0 18	0 10,616	0.0 1.1		0.0 1.0		9,015	-	-	0 590	0.062		0.058		- 501	-	-
Freezer Removal	0	0		0	0	10,616	0.0		0.0		9,015			390	0.002		0.036		- 501		-
Freezer Exchange	7	7		7	7	2,482	0.5		0.4		3,698	-	-	355	0.065		0.061		528	-	
Total Non-Efficiency Measures	126					93,945								746							
Misc Ins,Attic Access/Vent	1					86								86							_
Duct Sealing	3					802								267							
Duct Insulation	0					0								0							
Damming Material	0					0								0							
Htg. Sys. Tune & Clean Htg. Sys./WH Other	25 0					1,972 0								79							
Air Conditioning Work	0					0								0							
Water Heater Repair	0					0								0							
Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat	0					0								0							
Unspecified Utility Meas.	0					0								0							
CO Detector Smoke Detector	0					0								0							
Smoke Detector Fuses	0					0								0							
Htg Sys Safety Check	0					0								0							
Htg Sys Ventilation	61					9,790								160							
Water Heater Ventilation	53					8,643								163							
Bathroom Ventilation	0					0								0							
Dryer Ventilation	0					0								0							
Kitchen Ventilation	0					0								0							
Other Exhaust Ventilation Asbestos Removal (Minor)	0					0								0							
Health/Safety Repairs	71					95,235								1,341							
Health/Safety Other	0					0								1,541							
Consumables	0					0								0	1						
General Repairs	16					5,478								342							
Meter Refrig (no action)	13					0								0							
Meter Freezer (no action)	3					0								0							
Support Transportation Allowance	126 0					67,173 0								533							
Landlord Contr Misc	0					0								0							
Landlord Contr Furnace	0					0								0							
Landlord Contr DHW	ő					0								Ŏ							
Client Contr (Any)	0				<u></u>	0								0							
Lead Safe Work	0					0						·		0							
Unspecifed/Other	0					0	I							0	I						

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$670,482

	Numbe	er of Dwe	llinas	Number	of Dwellings				Billing A	Adjusted F	irst-Year S	avings		Averag			ted Firs			nd Savin	gs
		with Impac			ricity Impacts	Spending on		E	Electricity	,			Gas	Spending on	•		Electricit			G	ias
				Seas		Materials	Sum			inter	Annual	Pk-Day	Annual	Materials	Sum		Win			Pk-Day	Annual
Measure	Total	Electric	Gas	Cooling	Heating	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms
Total Efficiency Measures	98	73	95	73	73	548,551	12.9		7.1		40,364	232	22,725	5,597	0.176		0.097		553	2.44	239
Total Shell & Htg. Sys. Repl	98	72	95	70	72	433,095	10.7	12,952	4.2	6,444	19,396	215	19,776	4,419	0.153	185	0.058	89	269	2.26	208
Total Shell Measures	98	72	95	70	72	229,665	10.7	12,952	4.2	6,444	19,396	121	11,154	2,344	0.153	185	0.058	89	269	1.28	117
Wall Insul.	50			40	0	73,936	4.3	5,224	0.0	0	5,224	43	3,959	1,479	0.108		0.000	0	131	0.86	79
Open Blown Ceiling Insul.	66			50	1	30,429	3.3	4,021	0.2	282	4,303	27	2,446	461	0.067	80	0.183	282	86	0.42	38
Cavity Fill Insul.	25			20	0	18,800	1.0	1,266	0.0	0	1,266	16	1,465	752	0.052	63	0.000	0	63	0.64	59
Sloped Attic Insul. Kneewall Insul.	23 22		23 22	18 17	0	10,083 13,902	0.9	1,026 348	0.0	0	1,026 348	11 4	998 411	438 632	0.047 0.017	57 20	0.000	0	57 20	0.47 0.20	43 19
Infil. Reduction	95		92	67	2	39,365	0.6	707	0.0	123	830	13	1,236	414	0.009		0.000	61	12	0.20	13
Found /Crawl Insul	28			6	0	16.849	0.0	360	0.1	0	360	4	368	602	0.050		0.000	0	60	0.13	13
Bandjoist Insul.	63				Ö	26,301	0.0	0	0.0	0	0	3	302	417	-	-	-	-	-	0.05	5
Furnace Blower Fan ¹	96			_	70	0	0.0	0	3.9	6,039	6,039	(0)	(30)	0	0.000	0	0.056	86	86	(0.00)	(0)
Exhaust Ventilation	0			0	0	0	0.0	0	0.0	0,000	0,000	0	(00)	0	0.000		0.000		00	(0.00)	(0)
Total Heating System Repl	69				0	203,430	0.0	0	0.0	0	0		8,622	2,948						1.36	125
Condensing Htg Sys Repl	69				-	203,430	0.0	0	0.0	0	0		8,622	2,948						1.36	125
Non-Cond Htg Sys Repl	0	0		-	-	0	0.0	0	0.0	ō	Ō	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0	0		-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0			-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
				by	er of Measures Fuel Type		Summer		Winter		Annual	Pk-Day	Annual		Summer		Winter			Pk-Day	Annual
	Total	Electric	Gas		Electric Gas		kW		kW		kWh	therms	therms		kW		kW		kWh	therms	therms
Water Heating Temp. Reduct.	83	13	70 0	211	31 18 0	1 99,645 0 0	0.0		0.0		2,300	16.8	2,950	1,201	0.000		0.003		177	0.240	42
WH Wrap	0			0		0 0	0.0		0.0		0	0.0	0	0	-		-			_	
Pipe Insul	79		68	79	11 6		0.0		0.0		463	0.7	241	20	0.000		0.000		42	0.01	- 4
LF Showerhead	16		12	16		2 160	0.0		0.0		700	0.3	101	10	0.000		0.004		175	0.03	8
Faucet Aerator	36			51	9 4		0.0		0.0		292	0.2	70	7	0.000		0.001		37	0.01	3
Std-Eff Wtr Htr Repl.	0	0	0	0	0	0 0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Hi-Eff or Electric Wtr Htr Repl.	70		63	65	7 5		0.0		0.0		845	15.6	2,538	1,395	0.000		0.003		121	0.25	40
Lighting	58			488	488	3,432	1.0		1.8		9,198	-	-	59	0.017		0.031		159	-	-
Refrigerator/Freezer ³	17			19	19	12,379	1.2		1.1		9,469	-	-	728	0.069		0.064		557	-	-
Refrigerator Removal	0			0	0	0	0.0		0.0		0	-	-	0	-					-	-
Refrigerator Exchange	16 0			16	16 0	10,889	1.0		0.9		7,905 0	-		681 0	0.061		0.057		494	-	-
Freezer Removal Freezer Exchange	3	3		0	3	1,490	0.0 0.2		0.0 0.2		1,564	-		497	0.064		0.060		521	1 -	
1 Toolor Exertaings						1,100	0.2		0.2		1,001			.07	0.001		0.000		02.	1	
Total Non-Efficiency Measures	97					121,931								1,257							
Misc Ins,Attic Access/Vent	56					5,357								96							
Duct Sealing	6					1,035								173							
Duct Insulation	0					0								0							
Damming Material	0					0								0							
Htg. Sys. Tune & Clean Htg. Sys./WH Other	20					2,499 0								125 0							
Air Conditioning Work	0					0								0							
Water Heater Repair	0					0								Ö							
Refrigerator Coil Clean	0					0								Ö							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat	52					4,885								94							
Unspecified Utility Meas.	0					0								0							
CO Detector	0					0								0							
Smoke Detector Fuses	0					0								0							
Htg Sys Safety Check	0					0								0							
Htg Sys Ventilation	69					9.484								137							
Water Heater Ventilation	56					6,586								118							
Bathroom Ventilation	0					0								0							
Dryer Ventilation	0					0								0							
Kitchen Ventilation	0					0								0							
Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor) Health/Safety Repairs	0 31					1,639								0 53							
Health/Safety Other	0					1,639								0							
Consumables	0					0	-							0							
General Repairs	87					18,576								214							
Meter Refrig (no action)	53					0								0							
Meter Freezer (no action)	20					0								0							
Support	97					71,870								741							
Transportation Allowance	0					0								0							
Landlord Contr Misc	0					0								0							
Landlord Contr Furnace	0					0								0							
Landlord Contr DHW	0					0	1							01							
	^					0								0							
Client Contr (Any) Lead Safe Work	0					0								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$106,222

	II								Billing A	Adjusted F	irst-Year S	avings		Averag			ted First			nd Savin	gs
		er of Dwe with Impac			r of Dwellings tricity Impacts	Spending on			Electricity			1	Gas	Spending on	per Dv		Receivin		ures	1 6	as
		with impat	.13	Seas		Materials	Sum			inter	Annual	Pk-Day	Annual	Materials	Sum		Wint		Annual	Pk-Day	Annual
Measure	Total	Electric	Gas	Cooling	Heating	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms
Total Efficiency Measures	18	11	17	11	11	84,457	2.7		3.3		8,864	53	4,805	4,692	0.248		0.300		806	3.12	283
Total Shell & Htg. Sys. Repl	18	11	17	10	11	67,280	2.7	3,201	3.2	4,570	7,770	50	4,347	3,738	0.265	320	0.288	415	706	2.97	256
Total Shell Measures	18	11	17	10	11	46,055	2.7	3,201	3.2	4,570	7,770	36	3,088	2,559	0.265	320	0.288	415	706	2.11	182
Wall Insul.	7			2	0	13,924	0.3	407	0.0	0	407	10	860	1,989	0.169	203	0.000	0	203	1.43	123
Open Blown Ceiling Insul. Cavity Fill Insul.	16			10 4	1 1	10,050 3,444	0.8 0.5	917 586	1.3 1.1	1,831 1,608	2,748 2,194	4	382 498	628 574	0.076 0.121	92 147	1.268 1.113	1,831 1,608	275 548	0.30 1.16	25 100
Sloped Attic Insul.	10				0	3,643	0.5	506	0.0	0 1,000	506	6	495	364	0.121	101	0.000	0,000	101	0.57	49
Kneewall Insul.	7			3	0	2,035	0.1	64	0.0	0	64	2	150	291	0.018	21	0.000	ō	21	0.25	21
Infil. Reduction	16				1	6,941	0.1	64	0.1	163	227	2	142	434	0.005	6	0.113	163	23	0.11	9
Found./Crawl. Insul.	12			7	1	5,104	0.5	657	0.2	246	903	3	281	425	0.078	94	0.170	246	129	0.30	26 41
Bandjoist Insul.	17			-	1	913	0.0	0	0.0	51	51	3 (0)	290	114	0.000	0	0.036	51	51	0.48	
Furnace Blower Fan¹ Exhaust Ventilatiorf	17			- 0	10 0	0	0.0	0	0.5	671 0	671	(0)	(8)	0	0.000	0	0.046	67	67	(0.01)	(0)
Total Heating System Repl	7				0	21,225	0.0	0	0.0	0	0		1,259	3,032	-			-	-	2.09	180
Condensing Htg Sys Repl	7	. 0		-	-	21,225	0.0	0	0.0	0	0	15	1,259	3,032	-	-	-	-	-	2.09	180
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0			-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0			-	0	0	0.0 0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	·	, 0	0	-	U	0	0.0	U	0.0	U	0	0	0	0		-	-	-	-	-	
					ber of Measures Fuel Type		Summer		Winter		Annual	Pk-Day	Annual		Summer		Winter		Annual	Pk-Day	Annual
W . U .	Total	Electric		Total	Electric Gas	40.004	kW		kW		kWh	therms	therms	4.000	kW		kW		kWh	therms	therms
Water Heating Temp. Reduct.	14				7 16		0.0		0.0		412	2.6	458 0	1,202	0.000		0.002		103	0.265	46
WH Wrap	d			0	0 0	ő	0.0		0.0		0	0.0	0	ő	-		-		-	-	-
Pipe Insul.	7	3	4	7	3 4	140	0.0		0.0		128	0.1	20	20	0.000		0.000		43	0.01	5
LF Showerhead	2			2	0 2	20	0.0		0.0		0	0.1	25	10	-		-			0.04	12
Faucet Aerator Std-Eff Wtr Htr Repl.	4		3	6	3 3		0.0		0.0		97 0	0.0	7	6	0.000		0.002		97	0.01	2
Hi-Eff or Electric Wtr Htr Repl.	12		-		1 7	16.650	0.0		0.0		188	2.5	405	1,388	0.000		0.002		94	0.25	41
Lighting	9			49	49	343	0.1		0.1		681	-	-	38	0.008		0.015		76	-	-
Refrigerator/Freezer ³	C			0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Refrigerator Removal	0			0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Refrigerator Exchange Freezer Removal	0			0	0	0	0.0		0.0		0	-	-	0	-				-	-	-
Freezer Exchange	ď			0	Ö	ő	0.0		0.0		0	- 1		Ö			- 1		-	-	
Total Non-Efficiency Measures	18					21,766								1,209							
Misc Ins,Attic Access/Vent	6					911								152							
Duct Sealing	0					0								0							
Duct Insulation Damming Material	0					0								0							
Htg. Sys. Tune & Clean	2					250								125							
Htg. Sys./WH Other	0					0								0							
Air Conditioning Work	C					0								0							
Water Heater Repair	0					0								0							
Refrigerator Coil Clean Waterbed Mattress Pad	0					0								0							
Programmable Tstat						0								0							
Unspecified Utility Meas.	d					0	<u> </u>							0							
CO Detector	C					0								0							
Smoke Detector Fuses	0					0								0							
Htg Sys Safety Check	0					0								0							
Htg Sys Ventilation	9					2,050								228							
Water Heater Ventilation	9					1,750								194							
Bathroom Ventilation Dryer Ventilation	0					0								0							
Kitchen Ventilation						0								0							
Other Exhaust Ventilation						0								0							
Asbestos Removal (Minor)	C	1				0								0							
Health/Safety Repairs	4					271								68							
Health/Safety Other Consumables	0					0								0							
General Repairs	15					5,047								336							
Meter Refrig (no action)	0)				0								0							
Meter Freezer (no action)	0					0								0							
Support Transportation Allowance	18					11,487 0								638 0							
Landlord Contr Misc	d					0								0							
Landlord Contr Furnace	d					0								0							
Landlord Contr DHW	0					0								0							
Client Contr (Any) Lead Safe Work	0					0	-							0							
Unspecifed/Other	d					0								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$496,034

	Numbe	r of Dwe	llinas	Number	of Dwellings			1	Billing A	Adjusted Fi	irst-Year S	avings		Averaç	ge Billing per Dv		ted First			nd Savin	gs
		with Impac		with Elec	tricity Impacts	Spending on			lectricity				Gas	Spending on	-	_	Electricit	y			as
Measure	Total	Electric	Gas	Seas Cooling		Materials & Labor (\$)	Sum kW	mer kWh	kW	inter kWh	Annual kWh	Pk-Day therms	Annual therms	Materials & Labor (\$)	Sumr kW	ner kWh	Win kW	ter kWh	Annual kWh	Pk-Day therms	Annual therms
Total Efficiency Measures	84	74	74	74	74	403,596	13.4		6.1		33,301	178	17,310	4,805	0.180		0.082		450	2.41	234
Total Shell & Htg. Sys. Repl	84	74	74	70	74	346,475	12.1	14,639	4.4	6,880	21,519	169	15,753	4,125	0.173	209	0.060	93	291	2.28	213
Total Shell Measures	84	74	74	70	74	240,630	12.1	14,639	4.4	6,880	21,519	96	8,961	2,865	0.173	209	0.060	93	291	1.30	121
Wall Insul. Open Blown Ceiling Insul.	44 68	37 59	40 59	37 59	0 1	80,196 52,460	4.3 3.5	5,151 4,188	0.0 0.6	0 875	5,151 5,063	37 16	3,439 1,456	1,823 771	0.115 0.059	139 71	0.000 0.560	0 875	139 86	0.92 0.26	86 25
Cavity Fill Insul.	23	18	20	18	0	23,155	1.1	1.286	0.0	0/3	1,286	15	1,356	1,007	0.059	71	0.000	0/3	71	0.20	68
Sloped Attic Insul.	35	28	31	28	0	14,408	1.7	2,098	0.0	0	2,098	16	1,449	412	0.062	75	0.000	0	75	0.50	47
Kneewall Insul.	33	29	29	29	0	14,919	0.5	625	0.0	0	625	3	274	452	0.018	22	0.000	0	22	0.10	9
Infil. Reduction Found /Crawl. Insul.	77 35	62 14	69 35	62 14	1	26,651 27,016	0.4	430 861	0.0	58 0	488 861	4	404 547	346 772	0.006 0.051	7 62	0.037	58 0	8 62	0.06	6 16
Bandjoist Insul.	12		12	- 14	0	1,826	0.7	0	0.0	0	001	1	58	152	- 0.051	- 02	- 0.000	-	- 02	0.17	5
Furnace Blower Fan ¹	83	73	74	_	73	0	0.0	0	3.8	5,948	5,948	(0)	(24)	0	0.000	0	0.052	81	81	(0.00)	(0)
Exhaust Ventilatiorf	0	0	0	0	0	0	0.0	0	0.0	0	0	0	()	0	-	-	-	-	-	-	- (-)
Total Heating System Repl	55	0	55	-	0	105,845	0.0	0	0.0	0	0	73	6,792	1,924	-	-	-	-	-	1.33	123
Condensing Htg Sys Repl	55	0	55	-	-	105,845	0.0	0	0.0	0	0		6,792	1,924	-	-	-	-		1.33	123
Non-Cond Htg Sys Repl	0	0	0	-	- 0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl Heat Pump Repl	0		0		0	0	0.0	0	0.0	0	0	0	0	0					-		-
Other Htg Sys Repl	Ö	Ō	0	-	Ō	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	by	per of Measures Fuel Type Electric Gas		Summer		Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms
Water Heating	66	13	53	94	16 78	48,999	0.0		0.0		1,147	9.1	1,557	742	0.000		0.002		88	0.171	29
Temp. Reduct.	0	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
WH Wrap	0 41		0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	- 0.01	-
Pipe Insul. LF Showerhead	3	7	34 3	41 3	7 34 0 3	275 14	0.0 0.0		0.0		295 0	0.3 0.1	112 24	7 5	0.000		0.000		42	0.01	3 8
Faucet Aerator	10		7	12	3 9	31	0.0		0.0		97	0.0	14	3	0.000		0.001		32	0.01	2
Std-Eff Wtr Htr Repl.	0	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0							
Hi-Eff or Electric Wtr Htr Repl. Lighting	40	41	34	38 387	6 32 387	48,679 997	0.0		1.0		755 5,119	8.6	1,407	1,217 24	0.000		0.003		126 125	0.25	41
Refrigerator/Freezer ³	11			11	11	7,125	0.7		0.6		5,516	-	-	648	0.062		0.058		501	-	-
Refrigerator Removal	0	0		0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Refrigerator Exchange	11			11	11	7,125	0.7		0.6		5,516	-	-	648	0.062		0.058		501	-	-
Freezer Removal Freezer Exchange	0 0	0 0		0 0	0 0	0	0.0 0.0		0.0 0.0		0 0	-	-	0 0	- :				-	-	-
Total Non-Efficiency Measures	84					92,438								1,100							
Misc Ins,Attic Access/Vent	43					9,621								224							
Duct Sealing	0					0								0							
Duct Insulation	0					0								0							
Damming Material Htg. Sys. Tune & Clean	0 14					0 1,352								97							
Htg. Sys./WH Other	0					0								0							
Air Conditioning Work	0					0								0							
Water Heater Repair	0					0								0							
Refrigerator Coil Clean Waterbed Mattress Pad	0					0								0							
Programmable Tstat	ő					0								ő							
Unspecified Utility Meas.	0					0								0							
CO Detector Smoke Detector	0					0								0							
Fuses	0					0								0							
Htg Sys Safety Check	Ö					0								0							
Htg Sys Ventilation	54					8,142								151							
Water Heater Ventilation Bathroom Ventilation	37 0					3,866 0								104 0							
Dryer Ventilation	0					0								0							
Kitchen Ventilation	Ö					ő								ő							
Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor)	0					0								0							
Health/Safety Repairs Health/Safety Other	11 0					737 0								67 0							
Consumables	0					0								0							
General Repairs	76					23,625								311							
Meter Refrig (no action)	46					0								0							
Meter Freezer (no action) Support	22 84					0 45,094								537							
Transportation Allowance	0					45,094								0							
Landlord Contr Misc	0					0								0							
Landlord Contr Furnace	0					0								0							
Landlord Contr DHW Client Contr (Any)	0					0								0							
Lead Safe Work	0					0								0							
Unspecifed/Other	0					0								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refligeration measure regiscements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$119,806

	Numbe	er of Dwe	llinas	Number	of Dwellings				Billing A	Adjusted F	irst-Year S	avings		Averag			ted Firs			nd Savin	gs
		with Impac			tricity Impacts	Spending on		E	Electricity			I	Gas	Spending on	p		Electricit			G	as
Measure	Total	Electric	Gas	Seas Cooling	on	Materials & Labor (\$)	Sum kW	mer kWh	kW	inter kWh	Annual kWh	Pk-Day therms	Annual therms	Materials & Labor (\$)	Sum kW	mer kWh	Win kW	ter kWh	Annual kWh	Pk-Day therms	Annual therms
Total Efficiency Measures	21	19	14	19	19	97,740	4.8		3.3		15,077	25	2,417	4,654	0.251		0.175		794	1.77	173
Total Shell & Htg. Sys. Repl	21	19	14	19	19	76,801	4.2	5,098	2.5	3,769	8,867	23	2,089	3,657	0.222	268	0.130	198	467	1.64	149
Total Shell Measures	21		14	19	19	45,267	4.2	5,098	2.4	3,693	8,791	12	1,133	2,156	0.222	268	0.127	194	463	0.89	81
Wall Insul.	11		7	10	1	19,483	1.3	1,619	1.2	1,855	3,474	6	527	1,771	0.134	162	1.213	1,855	347	0.83	75
Open Blown Ceiling Insul. Cavity Fill Insul.	19 4		11 2	18 4	2	13,116 2.327	1.9 0.3	2,239 341	0.5	765 0	3,004 341	3	295 77	690 582	0.103	124 85	0.250	382 0	167 85	0.29	27 38
Sloped Attic Insul.	6		3	6	0	1,570	0.3	341 448	0.0	0	341 448	1	93	262	0.071	85 75	0.000	0	75	0.42	38
Kneewall Insul.	6		3	6	0	877	0.1	175	0.0	0	175	0	33	146	0.024	29	0.000	0	29	0.12	11
Infil. Reduction	20	14	13	14	2	6,096	0.2	199	0.1	157	356	1	107	305	0.012	14	0.051	79	25	0.09	8
Found./Crawl. Insul.	2		1	1	1	1,722	0.1	78	0.2	308	386	0	3	861	0.064	78	0.202	308	386	0.03	3
Bandjoist Insul.	1		0	-	1	77	0.0	0	0.0	22	22	0	0	77	0.000	0	0.015	22	22	-	-
Furnace Blower Fan	19		14	-	17	0	0.0	0	0.4	585	585	(0)			0.000	0	0.023	34	34	(0.00)	(0)
Exhaust Ventilation	0		0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-		-	-	-	
Total Heating System Repl	13		12	-	1	31,534	0.0	0	0.0	76	76		956	2,426	0.000	0	0.050	76	76	0.87	80
Condensing Htg Sys Repl Non-Cond Htg Sys Repl	12 0		12 0	-	-	28,034 0	0.0	0	0.0	0	0	10 0	956 0	2,336	-	-	-	-	-	0.87	80
Electric Htg Sys Repl	0		0		0	0	0.0	0	0.0	0	0	0	0	0							-
Heat Pump Repl	1	1	ō	-	1	3,500	0.0	0	0.0	76	76	0	0	3,500	0.000	0	0.050	76	76	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	by	per of Measures Fuel Type Electric Gas		Summer kW		Winter kW		Annual kWh	Pk-Day	Annual therms		Summer kW		Winter kW			Pk-Day therms	Annual therms
Water Heating	10tai		Gas 9	37	17 20	16,867	0.0		0.0		1,346	therms 1.9	328	1,124	0.000		0.004		224	0.213	therms 36
Temp. Reduct.	0		0	0	0 0		0.0		0.0		0	0.0	0	0	-		-		-	-	-
WH Wrap	0		0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Pipe Insul.	14		8	14	6 8	280	0.0		0.0		255	0.1	21	20	0.000		0.000		43	0.01	3
LF Showerhead Faucet Aerator	4		1	6 5	5 1 2 3	60 25	0.0		0.0		521 64	0.0	6	15 5	0.000		0.004		174 32	0.02	6 1
Std-Eff Wtr Htr Repl.	0		0	0	0 0		0.0		0.0		04	0.0	0	5	0.000		0.001		- 32	0.00	_ 1
Hi-Eff or Electric Wtr Htr Repl.	13		9	12	4 8	16,502	0.0		0.0		505	1.8	297	1,269	0.000		0.003		126	0.20	33
Lighting	17	17		254	254	1,794	0.4		0.7		3,528	-	-	106	0.022		0.040		208	-	-
Refrigerator/Freezer ³	3	3		3	3	2,278	0.2		0.2		1,336	-	-	759	0.055		0.051		445	-	-
Refrigerator Removal	0			0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Refrigerator Exchange	3			3	3	2,278	0.2		0.2		1,336	-	-	759	0.055		0.051		445	-	-
Freezer Removal Freezer Exchange	0			0	0	0	0.0 0.0		0.0		0	-		0			-		-	-	
-						ı.								l l						ı	
Total Non-Efficiency Measures	21					22,066								1,051							
Misc Ins,Attic Access/Vent	13					1,654 0								127 0							
Duct Sealing Duct Insulation	0					0								0							
Damming Material	ő					ő								0							
Htg. Sys. Tune & Clean	1					75								75							
Htg. Sys./WH Other	0					0								0							
Air Conditioning Work	0					0								0							
Water Heater Repair Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	Ö					ő								Ö							
Programmable Tstat	0					0								0							
Unspecified Utility Meas.	0					0								0							
CO Detector	0					0								0							
Smoke Detector Fuses	0					0								0							
Htg Sys Safety Check	0					0								0							
Htg Sys Ventilation	12					1,865								155							
Water Heater Ventilation	9					1,813								201							
Bathroom Ventilation	0					0								0							
Dryer Ventilation Kitchen Ventilation	0					0								0							
Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor)	0					ő								0							
Health/Safety Repairs	6					400								67							
Health/Safety Other	0					0								0							
Consumables	0					0								0							
General Repairs Meter Refrig (no action)	17 0					3,662 0	-							215 0							
Meter Freezer (no action)	0					0								0							
Support	21					12,597								600							
Transportation Allowance	0					0								0							
Landlord Contr Misc	0					0								0							
Landlord Contr Furnace	0					0								0							
Landlord Contr DHW Client Contr (Any)	0					0								0							
Lead Safe Work	0					0								0							
Unspecifed/Other	0					0								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the tillity partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Total Reported Labor, Materials and Utility Admin Expenditures: \$501,854

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$501,854

Take of Enchanges Measures 18. 10 74 9 80 18. 10 75 9 80							1				Billing A	djusted F	irst-Year S	avings		Averaç			ted First			nd Savin	gs
Manuse Total Section Total Section Total							s s			E	Electricity				Gas		-	_					ias
Teacher Teac	Measure	Total	Electric	Gas																			
Tread Series Measures 18	Total Efficiency Measures	84	80	74	79	80		450,195	13.9		25.1		76,495	142	14,794	5,359	0.176		0.314		956	1.91	200
Walk Income 1968 19	Total Shell & Htg. Sys. Repl	82	78	74	69	78		342,782	11.2	13,542	21.6	35,683	49,225	131	12,960	4,180	0.163	196	0.277	457	631	1.78	175
Concelled media 78	Total Shell Measures	82																					127
Cachy Fill Incid. 28 28 28 28 28 23 2 1 15260 554 18 2045 54 4 44 0 58 191 0030 24 081 147 148 018 18 18 18 18 18 18 18 18 18 18 18 18 1																							
Bispein destination		28																					
## Profession	Sloped Attic Insul.	45	40	41	40			24,352	1.3	1,512	0.9	1,513	3,025	14	1,341	541	0.031	38	0.458	757	76	0.33	33
Tread Clavell leads 27 9 26 9 2 8,54 0 4 48 0 8 1,379 1,165 2 185 3 0 0 0 17 190 394 0 0 0 7 1 0 0 0 0 0 0 0 0 0																	0.014	17	0.053	87	21	0.14	14
Basingose half 27 1 26 - 1 3.64 0.0 0.1 195 195 15 19 100 0.00 0.0 19 195 195 100 0.00 0.0 0.00 0.																	0.042	- 51	0.417	690	204	0.07	- 7
Fuence steps frag	Bandjoist Insul.				-																		
Troub Member Systems Regist St.	Furnace Blower Fan ¹		73	74	-	73			0.0	0		11,057	11,057	(0)	(31)		0.000	0		151	151	(0.00)	(0)
Condeminary By Part Right 50 Part Right 50 Part 50	Exhaust Ventilation	0	0	0	0	0			0.0	0	0.0	0		0	0	0	-	-	-	-	-	-	_
Name Cancel May Specified	Total Heating System Repl					3											0.000	0	0.090	149	149		
Exercise Flags Flags Sept					-										2,345	-			-	-	0.76	/5	
Committed System Committed S	Electric Htg Sys Repl				-	3		6,947					448		-	2,316	0.000	0	0.090	149	149	-	-
Main Flat	Heat Pump Repl				-										•	0	-	-	-	-	-	-	-
Marke Heating Total Electic Call Service Ser	Other Htg Sys Repl	0	0	0	-	0		0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Water Marie Marie Selective Graph (2016) 10 10 10 10 10 10 10 10 10 10 10 10 10					Num	ber of Measur	es																
Water Materials 79		Total	Electric	Gae			20							Pk-Day									
Temps, Repaired. 0	Water Heating							83,902								1,062							
Pipe Insul. 78 17 61 78 17 61 78 17 61 337 10 2 15 10 10 10 10 10 10 10	Temp. Reduct.	0		0	0	0	0	0	0.0				0	0.0	0	0	-		-		-	-	-
L'É Brownhead and 37 10 27 37 10 27 37 10 0 27 31 10 0 0 0 0 0 1,738 3 0,000 0,004 174 0.02 5 and 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																ŭ	-		-		- 40	-	-
Fautor Aerator																4							
Hieff or Electic With Hir Reput	Faucet Aerator	64													77	1							
Lighting 72 72 699 699 3,834 1.1 1.9 10,051 - 50 0.015 0.027 140 -	Std-Eff Wtr Htr Repl.		0			0										0					-		
Refrigerant Freezer* 25 25 26 19,878 16 15 13,179			7			7	60							9.2									25
Refrigerater Femoval Refronted Femoval Refrigerater														-								-	-
Freezer Removal 0	Refrigerator Removal	0												-	-		-		-		-	-	-
Freezer Exchange 6 6 6 6 2,989 0.4 0.4 3.204 - 448 0.066 0.061 534 TOIAI NOn-Efficiency Measures 64 51,599 - 64	Refrigerator Exchange	22											9,975	-	-	781	0.056		0.052		453	-	-
Total Non-Efficiency Measures B4	Freezer Removal Freezer Exchange													-	-		0.066		0.061		534	-	-
Mile in s. Altic Accessivent	Total Non Efficiency Messures	0.4						E4 6E0								C4E							
Duct Sealing	Misc Ins.Attic Access/Vent																						
Damming Material 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Duct Sealing																						
Hig. Sys. Who Hother																							
Hig. Sys. MH Other 0																0							
Water Heater Repair	Htg. Sys./WH Other	0						0								0							
Refrigerator Coil Cleam 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																0							
Waterbed Mattress Pad 0 0 Programmable Tstat 0 0 CO Detector 0 0 CO Detector 0 0 Fuses 0 0 Hig Sys Safety Check 0 0 Hig Sys Vernitation 5 0 Water Heater Vertilation 0 0 Water Heater Vertilation 0 0 Deep Ververliation 0 0 Wither Exhaust Vertiliation 0 0 Other Exhaust Vertiliation 0 0 Other Exhaust Vertiliation 0 0 O Sestos Removal (Minor) 0 0 Health/Safety Repairs 67 83,404 1,245 Health/Safety Other 0 0 O General Repairs 0 0 0 Meter Freezer (no action) 0 0 0 Meter Freezer (no action) 0 0 0 Meter Freezer (no action) 0 0 0 Meter Freeze																0							
Programable Tstat																ő							
CO Detector 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Programmable Tstat	0														-							
Snoke Detector 0																· ·							
Fuses 0																							
Hig Sys Ventilation 5 1,099 220 Water Heater Ventilation 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Fuses	0						0								0							
Water Heater Ventilation 0 Bathroom Ventilation 0 Dryer Ventilation 0 Other Exhaust Ventilation 0 Other Exhaust Ventilation 0 Other Exhaust Ventilation 0 Osabestos Removal (Minor) 0 Health/Safety Repairs 67 83,404 1,245 Health/Safety Other 0 Consumables 0 General Repairs 0 0 0 Meter Repairs 0 0 0 Meter Refig (no action) 0 Meter Freezer (no action) 0 Meter Freezer (no action) 0 O Landord Ontr Misc 0 Landord Contr Misc 0 Landord Contr Misc 0 Landord Contr DHW 0 Clear Contr (Any) 0 Lead Safe Work 0																0							
Bathroom Ventilation 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																							
Kirchen Ventilation 0 0 Other Exhaust Ventilation 0 0 Asbestos Removal (Minor) 0 0 Asbestos Removal (Minor) 0 0 Health/Safety Repairs 67 83,404 1,245 Health/Safety Other 0 0 0 Consumables 0 0 0 General Repairs 0 0 0 Meter Freig (no action) 0 0 0 Meter Freezer (no action) 0 0 0 Support 84 50,560 602 Transportation Allowance 0 0 0 Landlord Corth Misc 0 0 0 Landlord Corth Furnace 0 0 0 Landlord Corth Furnace 0 0 0 Landlord Contr Furnace 0 0 0 Landlord Contr (Any) 0 0 0 Landlord Contr (Any) 0 0 0 Landlord Contr (Any)	Bathroom Ventilation															ō							
Other Exhaust Ventilation 0 0 Assestos Removal (Minor) 0 0 Health/Safety Repairs 67 83,404 1,245 Health/Safety Other 0 0 0 Consumables 0 0 0 General Repairs 0 0 0 Meter Refig (no action) 0 0 0 Meter Freezer (no action) 0 0 0 Support 84 50,560 602 Transportation Allowance 0 0 0 Landlord Contr Misc 0 0 0 Landlord Contr Misc 0 0 0 Landlord Contr Furnace 0 0 0 Landlord Contr DHW 0 0 0 Client Contr (Any) 0 0 0 Lead Safe Work 0 0 0	Dryer Ventilation															-							
Asbestos Removal (Minor) 0 0 0 1,245 Health/Safety Repairs 67 83,404 1,245 Health/Safety Other 0 0 0 0 0 Consumables 0 0 0 0 0 0 Meter Refrig (no action) 0 0 0 0 0 Meter Refrig (no action) 0 0 0 0 0 Meter Refrig (no action) 0 0 0 0 0 0 Meter Refrig (no action) 0 0 0 0 0 0 0 0 Meter Refrig (no action) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																-							
Health/Safety Repairs 67 83,404 1,245 Health/Safety Other 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Asbestos Removal (Minor)															-							
Consumables 0 0 0 General Repairs 0 0 0 Meter Freigr (no action) 0 0 0 Meter Freezer (no action) 0 0 0 Support 84 50,560 602 Transportation Allowance 0 0 0 Landlord Contr Misc 0 0 0 Landlord Contr Furnace 0 0 0 Landlord Contr Furnace 0 0 0 Landlord Contr DHW 0 0 0 Client Contr (Any) 0 0 0 Lead Safe Work 0 0 0	Health/Safety Repairs	67																					
General Repairs 0 0 0 Meter Refing (no action) 0 0 0 Meter Freezer (no action) 0 0 0 Support 84 50,560 602 Transportation Allowance 0 0 0 Landlord Contr Misc 0 0 0 Landlord Contr Furnace 0 0 0 Landlord Contr DHW 0 0 0 Client Contr (Any) 0 0 0 Lead Safe Work 0 0 0																							
Meter Refrig (no action) 0 0 Meter Freezer (no action) 0 0 Support 84 50,560 602 Transportation Allowance 0 0 0 Landlord Contr Misc 0 0 0 Landlord Contr Furnace 0 0 0 Landlord Contr DHW 0 0 0 Client Contr (Any) 0 0 0 Lead Safe Work 0 0 0																							
Meter Freezer (no action) 0 0 Support 84 50,560 602 Transportation Allowance 0 0 0 Landlord Contr Misc 0 0 0 Landlord Contr Furnace 0 0 0 Landlord Contr DHW 0 0 0 Client Contr (Any) 0 0 0 Lead Safe Work 0 0 0	Meter Refrig (no action)	0					-	0								0							
Transportation Allowance 0 0 0 Landlord Contr Misc 0 0 0 Landlord Contr Furnace 0 0 0 Landlord Contr DHW 0 0 0 Client Contr (Any) 0 0 0 Lead Safe Work 0 0 0	Meter Freezer (no action)						_									_							
Landlord Contr Misc 0 0 0 Landlord Contr Furnace 0 0 0 Landlord Contr DHW 0 0 0 Client Contr (Any) 0 0 0 Lead Safe Work 0 0 0																							
Landlord Contr Furnace 0 Landlord Contr DHW 0 Client Contr (Any) 0 Lead Safe Work 0 0 0 0 0 0 0	Landlord Contr Misc																						
Client Contr (Any) 0 0 Lead Safe Work 0 0	Landlord Contr Furnace	0						0								-							
Lead Safe Work 0 0 0	Landlord Contr DHW															-							
							+																
	Unspecifed/Other							0															

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$232,743

	Numbe	r of Dwel	llinas	Number	of Dwellings				Billing A	djusted F	irst-Year S	avings		Averag			sted First Receivin			nd Saving	js .
	١	with Impac	ts	with Elect	ricity Impacts	Spending on Materials	Sum	nmer	Electricity Wi	nter	Annual	Pk-Day	Gas Annual	Spending on Materials	Sumn	ner	Electricity Wint	er		G Pk-Day	Annual
Measure	Total	Electric	Gas	Cooling	Heating	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms
Total Efficiency Measures	86	68	65	66	68	196,593	5.8		4.2		19,611	63	6,127	2,286	0.087		0.062		288	0.97	94
Total Shell & Htg. Sys. Repl	78		55		64	154,676	5.0	5,994	3.1	4,820	10,814	60	5,635	1,983	0.089	107	0.048	75	169	1.10	102
Total Shell Measures Wall Insul.	78 12	64 10	55 12		64 0	65,621 7,576	5.0 1.2	5,994 1,428	3.1 0.0	4,820	10,814 1,428	25 7	2,344 648	841 631	0.089	107	0.048	75 0	169 143	0.46	<u>43</u> 54
Open Blown Ceiling Insul.	40	28	34	28	2	17,436	2.9	3,497	0.0	809	4,306	11	999	436	0.118	125	0.000	405	154	0.58	29
Cavity Fill Insul.	3	2	2		0	1,034	0.1	133	0.0	0	133	0	32	345	0.055	66	0.000	0	66	0.17	16
Sloped Attic Insul.	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Kneewall Insul.	9	5	9	5	0	5,772	0.1	179	0.0	0	179	1	90	641	0.030	36	0.000	0	36	0.11	10
Infil. Reduction Found /Crawl. Insul.	57 9	47 1	28 9	47 1	4 0	14,489 6,717	0.6	698 60	0.8 0.0	1,294 0	1,993	3	321 78	254 746	0.012	15 60	0.207	324 0	42 60	0.12	11 9
Bandjoist Insul.	34	1	33		1	12,597	0.0	0	0.1	200	200	2	186	371	0.000	0	0.128	200	200	0.06	6
Furnace Blower Fan ¹	74	60	55	-	60	0	0.0	0	1.6	2,516	2,516	(0)	(10)	0	0.000	0	0.027	42	42	(0.00)	(0)
Exhaust Ventilatior	0	0	0	0	0	0	0.0	0	0.0	0	0	0	, o	0	-	-	-	-	-	-	- ' '
Total Heating System Repl	38	0	38		0	89,055	0.0	0	0.0	0	0	35	3,291	2,344	-	-	-	-	-	0.93	87
Condensing Htg Sys Repl	38	0	38		-	89,055	0.0	0	0.0	0	0	35	3,291	2,344	-	-	-	-	-	0.93	87
Non-Cond Htg Sys Repl Electric Htg Sys Repl	0	0	0	-	- 0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0	0	0		0	0	0.0	0	0.0	0	0	0	0	0					-		
Other Htg Sys Repl	ō	0	0	-	Ö	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
				Monat																	
					er of Measures Fuel Type		Summer		Winter		Annual	Pk-Day	Annual		Summer		Winter		Annual	Pk-Day	Annual
	Total	Electric	Gas	Total	Electric Gas		kW		kW		kWh	therms	therms		kW		kW		kWh	therms	therms
Water Heating	64	21	43	89		36,858	0.0		0.0		1,688	2.8	492		0.000		0.001		80	0.064	11
Temp. Reduct. WH Wrap	0	0	0	0		0 0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Pipe Insul.	61	21	40	61		0 485	0.0		0.0		885	0.2	82	8	0.000		0.000		42	0.01	2
LF Showerhead	0	0	0	0		0 0	0.0		0.0		0	0.0	0	0	-		-			-	
Faucet Aerator	0	0	0	0		0 0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Std-Eff Wtr Htr Repl.	0	0 7	0	0		0 0	0.0		0.0		0	0.0	0	0	-		- 0.000		-	-	-
Hi-Eff or Electric Wtr Htr Repl. Lighting	29 39	39	22	28 224	6 2 224	1 36,374	0.0		0.0		803 3,899	2.5	410	1,254	0.000		0.003		115 100	0.11	19
Refrigerator/Freezer ³	7	7		6	6	4,550	0.4		0.4		3,210	-		650	0.056		0.053		459		-
Refrigerator Removal	0	0		0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Refrigerator Exchange	5	5		4	4	3,860	0.3		0.3		2,244	-	-	772	0.055		0.052		449	-	-
Freezer Removal Freezer Exchange	1	1		1	1	40 650	0.1 0.1		0.1 0.0		534 432	-	-	40 650	0.066 0.053		0.061 0.050		534 432	-	-
																					-
Total Non-Efficiency Measures Misc Ins,Attic Access/Vent	85 9					36,150								425 129							
Duct Sealing	0					1,158 0								129							
Duct Insulation	1					62								62							
Damming Material	0					0								0							
Htg. Sys. Tune & Clean	2					170								85							
Htg. Sys./WH Other Air Conditioning Work	0					0								0							
Water Heater Repair	0					0								0							
Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat Unspecified Utility Meas.	0					0								0							
CO Detector	0					0								0							
Smoke Detector	0					0								0							
Fuses	0					0								0							
Htg Sys Safety Check Htg Sys Ventilation	0 30					0 5,723								191							
Water Heater Ventilation	21					3,296								157							
Bathroom Ventilation	0					0								0							
Dryer Ventilation	0					0								0							
Kitchen Ventilation Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor)	0					0								0							
Health/Safety Repairs	4					315								79							
Health/Safety Other	0					0								0							
Consumables	0					0								0							
General Repairs Meter Refrig (no action)	37 30					4,294 0								116							
Meter Freezer (no action)	8					0								0							
Support	85					21,133								249							
Transportation Allowance	0					0								0							
Landlord Contr Misc Landlord Contr Furnace	0					0								0							
Landlord Contr DHW	0					0								0							
Client Contr (Any)	0					0								0							
Lead Safe Work	0					0								0							
Unspecifed/Other	0					0								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$209,637

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$209,637

	Numbe	r of Dwe	Minge	Number	of Dwellings				Billing A	djusted F	irst-Year S	avings		Averag			ted First			nd Savin	gs
		with Impac		with Elec	ricity Impacts	Spending on		1	Electricity				Gas	Spending on	pei Di	·cg	Electricity	Ĭ			ias
Measure	Total	Electric	Gas	Sease Cooling		Materials & Labor (\$)	Sum kW	mer kWh	Wii kW	nter kWh	Annual kWh	Pk-Day therms	Annual therms	Materials & Labor (\$)	Sumr kW	ner kWh	Wint kW	er kWh	Annual kWh	Pk-Day therms	Annual therms
Measure	Total	LIECTIC	Gas	Cooling	rieating	& Labor (\$)	KVV	KVVII	NVV	KVVII	KVVII	uleillis	tiletilis	& Labor (\$)	KVV	KVVII	NVV	KVVII	KVVII	uleillis	therms
Total Efficiency Measures	38	36	31	36	36	173,517	5.6		2.6		18,137	42	3,978	4,566	0.156		0.072		504	1.34	128
Total Shell & Htg. Sys. Repl	38	36	31	28	36	145,841	4.4	5,258	0.5	781	6,039	40	3,654	3,838	0.156	188	0.014	22	168	1.28	118
Total Shell Measures	38	36	31	28	36	95,025	4.4	5,258	0.5	781	6,039	26	2,359	2,501	0.156	188	0.014	22	168	0.83	76
Wall Insul.	23	15		15	0	31,508	1.7	2,027	0.0	0	2,027	9	806	1,370	0.112	135	0.000	0	135	0.46	42
Open Blown Ceiling Insul. Cavity Fill Insul.	25 16	20 9	18 14	20 9	0	19,569 21,034	1.2 0.4	1,477 518	0.0	0	1,477 518	5 8	450 710	783 1,315	0.061 0.048	74 58	0.000	0	74 58	0.27 0.55	25 51
Sloped Attic Insul.	17	12		12	Ö	4,366	0.4	541	0.0	0	541	2	209	257	0.037	45	0.000	0	45	0.17	16
Kneewall Insul.	5	4	5	4	0	1,161	0.1	177	0.0	0	177	2	140	232	0.037	44	0.000	0	44	0.31	28
Infil. Reduction	30	28	2	28	1	11,767	0.3	408	0.1	141	550	0	10	392	0.012	15	0.092	141	20	0.06	5
Found./Crawl. Insul. Bandjoist Insul.	9 7	2		2	1 0	4,836 783	0.1 0.0	110 0	0.2	296 0	406 0	0	28 10	537 112	0.046	55	0.192	296	203	0.04 0.01	4 1
Furnace Blower Fan ¹	37	35			35	0	0.0	0	0.2	344	344	(0)		0	0.000	0	0.006	10	10	(0.00)	(0)
Exhaust Ventilation	0	0		0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	(0.00)	- (0)
Total Heating System Repl	19			-	0	50,817	0.0	0	0.0	0	0	14	1,295	2,675	-	-	-	-	-	0.74	68
Condensing Htg Sys Repl	19	0		-	-	50,817	0.0	0	0.0	0	0	14	1,295	2,675	-	-	-	-	-	0.74	68
Non-Cond Htg Sys Repl	0			-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-		-	-
Electric Htg Sys Repl Heat Pump Repl	0	0			0	0	0.0 0.0	0	0.0 0.0	0	0	0	0	0		-	-	-		-	-
Other Htg Sys Repl	ő	Ö		-	ő	ő	0.0	0	0.0	Ö	0	0	0	ő	-	-	-	-	-	-	-
					er of Measures Fuel Type		Summer		Winter		Annual	Pk-Day	Annual		Summer		Winter		Annual	Pk-Day	Annual
	Total	Electric		Total	Electric Gas		kW		kW		kWh	therms	therms		kW		kW		kWh	therms	therms
Water Heating	28	11			11 27 0 0		0.0		0.0		463	1.9	325	736 0	0.000		0.000		42	0.112	19
Temp. Reduct. WH Wrap	0	0		0	0 0	0	0.0		0.0		0	0.0	0	0	-		-			-	
Pipe Insul.	26	11		26	11 15	520	0.0		0.0		463	0.1	28	20	0.000		0.000		42	0.01	2
LF Showerhead	0	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Faucet Aerator Std-Eff Wtr Htr Repl.	0	0		0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Stα-Επ wtr Htr Repl. Hi-Eff or Electric Wtr Htr Repl.	14	0		12	0 0	20,095	0.0		0.0		0	1.8	297	1,435	-		-		-	0.13	21
Lighting	34	34		454	453	3,124	1.0		1.8		9,360	-	-	92	0.029		0.053		275	-	-
Refrigerator/Freezer ³	5	5		5	5	3,937	0.3		0.3		2,275	-	-	787	0.056		0.052		455	-	-
Refrigerator Removal	0	0		0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Refrigerator Exchange Freezer Removal	5 0	5 0		5 0	5 0	3,937 0	0.3 0.0		0.3 0.0		2,275 0			787 0	0.056		0.052		455	-	-
Freezer Exchange	0			Ö	Ō	0	0.0		0.0		Ō	-	-	0	-		-		-	-	
Total Non-Efficiency Measures	38					36,120								951							
Misc Ins,Attic Access/Vent	17					1,891								111							
Duct Sealing	0					0								0							
Duct Insulation	0					0								0							
Damming Material Htg. Sys. Tune & Clean	0 12					0 1,007								0 84							
Htg. Sys./WH Other	0					0								0							
Air Conditioning Work	0					0								0							
Water Heater Repair	0					0								0							
Refrigerator Coil Clean Waterbed Mattress Pad	0					0								0							
Programmable Tstat	1					100								100							
Unspecified Utility Meas.	0					0								0							
CO Detector Smoke Detector	0					0								0							
Fuses	0					0								0							
Htg Sys Safety Check	0					0								0							
Htg Sys Ventilation	21					4,900								233							
Water Heater Ventilation Bathroom Ventilation	13 0					3,020								232							
Dryer Ventilation	0					0								0							
Kitchen Ventilation	0					0								0							
Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor) Health/Safety Repairs	0 14					20,095								1,435							
Health/Safety Other	0					0								0							
Consumables	0					0								0							
General Repairs Meter Refrig (no action)	32 0					6,611								207							
Meter Retrig (no action) Meter Freezer (no action)	0					0								0							
Support	38					18,591								489							
Transportation Allowance	0					0								0							
Landlord Contr Misc Landlord Contr Furnace	0					0								0							
Landlord Contr PHW	0					0								0							
Client Contr (Any)	0					0								0							
Lead Safe Work	0					0								0							
Unspecifed/Other	0					0	L							0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$298,306

						1		E	Billing A	djusted Fi	irst-Year S	avings		Averag	je Billing		ted First			nd Savin	\$290,300 gs
		er of Dwe with Impac		Number with Elect Sease	of Dwellings tricity Impacts	Spending on Materials	Sum		lectricity Wir	nter	Annual	Pk-Day	Gas Annual	Spending on Materials	per Dw Sumr		Receiving Electricity Wint	y		G Pk-Day	as Annual
Measure	Total	Electric	Gas	Cooling		& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	& Labor (\$)	kW	kWh	kW	kWh		therms	therms
Total Efficiency Measures	53	50	48	47	50	257,580	8.9		7.1		27,665	94	9,190	4,860	0.190		0.142		553	1.95	191
Total Shell & Htg. Sys. Repl Total Shell Measures	53 53		48 48	40 40	50 50	190,001 121,963	8.1 8.1	9,762 9,762	6.0	9,393 9,393	19,155 19,155	88 59	8,228 5,479	3,585 2,301	0.202	244 244	0.120 0.120	188 188	383 383	1.84 1.23	171 114
Wall Insul.	32	26	32	26	0	50,774	3.1	3,718	0.0	9,393	3,718	20	1,868	1,587	0.202	143	0.000	0	143	0.63	58
Open Blown Ceiling Insul.	49		46	39 8	1	29,025	3.2	3,887	2.0	3,155	7,042	23	2,125	592	0.083	100	2.021	3,155	181	0.50	46
Cavity Fill Insul. Sloped Attic Insul.	11 16	8 13	10 15	13	0	10,339 5,158	0.5 0.6	659 679	0.0	0	659 679	6	551 369	940 322	0.068	82 52	0.000	0	82 52	0.59 0.26	55 25
Kneewall Insul.	10	9	8	9	Ö	2,491	0.1	169	0.0	0	169	1	95	249	0.016	19	0.000	0	19	0.13	12
Infil. Reduction Found /Crawl. Insul.	50 8	40 1	47 8	40 1	1 0	19,059 1,974	0.5	591 60	0.1	98 0	689 60	4	347 39	381 247	0.012	15 60	0.063	98 0	17 60	0.08	7 5
Bandjoist Insul.	32		31	_ '	1	3,142	0.0	0	0.0	142	142	1	104	98	0.000	0	0.000	142	142	0.05	3
Furnace Blower Fan ¹	52		48	-	49	0	0.0	0	3.8	5,998	5,998	(0)	(18)	0	0.000	0	0.078	122	122	(0.00)	(0)
Exhaust Ventilation	0		0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	
Total Heating System Repl Condensing Htg Sys Repl	34 34	0	34	-	- 0	68,038 68,038	0.0	0	0.0	0	0		2,750 2,750	2,001	-	-	-	-	-	0.87	81 81
Non-Cond Htg Sys Repl	0	0	0] -	-	00,030	0.0	0	0.0	0	0	0	2,750	2,001	-	-	- 1	-	-	-	-
Electric Htg Sys Repl	0		0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl Other Htg Sys Repl	0	0	0	-	0	0	0.0 0.0	0	0.0	0	0	0	0	0		-	-			-	-
						Ĭ	5.5					Ĭ		ı ı							
				by	er of Measures Fuel Type		Summer		Winter		Annual	Pk-Day	Annual		Summer		Winter			Pk-Day	Annual
Water Heating	Total 49	Electric 9	Gas 40	Total 102	Electric Gas 16 85	59,723	kW 0.0		kW		kWh 1,174	therms 5.5	therms 962	1,219	kW 0.000		kW 0.002		kWh 130	0.137	therms 24
Temp. Reduct.	0	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
WH Wrap Pipe Insul.	0 48	0	0 40	0 48	0 0 8 40	920	0.0 0.0		0.0		0 337	0.0	0 97	0 19	0.000		0.000		- 42	0.01	- 2
LF Showerhead	48 5	1	40	48 5	1 4	920 50	0.0		0.0		171	0.3	23	10	0.000		0.000		171	0.01	6
Faucet Aerator	10		8	13	3 10		0.0		0.0		97	0.0	11	7	0.000		0.001		48	0.00	1
Std-Eff Wtr Htr Repl. Hi-Eff or Electric Wtr Htr Repl.	0 42	0 5	0 37	0 36	0 0 4 31	0 58,688	0.0 0.0		0.0		0 568	0.0 5.1	0 831	0 1,397	0.000		0.003		- 114	0.14	- 22
Lighting	34		01	193	193	1,351	0.3		0.6		2,950	-	-	40	0.009		0.017		87	-	-
Refrigerator/Freezer ³	9			9	9	6,505	0.5		0.5		4,387	-	-	723	0.060		0.056		487	-	-
Refrigerator Removal Refrigerator Exchange	0	0		0 8	0 8	0 5,870	0.0 0.5		0.0 0.4		0 3,853	-	-	734	0.059		0.055		- 482	-	-
Freezer Removal	0			0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Freezer Exchange	1	1		1	1	635	0.1		0.1		534	-	-	635	0.066		0.061		534	-	
Total Non-Efficiency Measures Misc Ins,Attic Access/Vent	70 28					40,726 3,496								582 125							
Duct Sealing	0					0,430								0							
Duct Insulation	0					0								0							
Damming Material Htg. Sys. Tune & Clean	0 10					0 715								0 72							
Htg. Sys./WH Other	0					0								0							
Air Conditioning Work Water Heater Repair	0					0								0							
Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat Unspecified Utility Meas.	2					100 0								50 0							
CO Detector	0					0								0							
Smoke Detector Fuses	0					0								0							
Htg Sys Safety Check	0					0								0							
Htg Sys Ventilation	2					425								213							
Water Heater Ventilation Bathroom Ventilation	0					0								0							
Dryer Ventilation	0					0								0							
Kitchen Ventilation	0					0								0							
Other Exhaust Ventilation Asbestos Removal (Minor)	0					0								0							
Health/Safety Repairs	17					671								39							
Health/Safety Other Consumables	0					0								0							
General Repairs	52					9,256								178							
Meter Refrig (no action)	47					0								0							
Meter Freezer (no action) Support	5 50					26,063								521							
Transportation Allowance	0					0								0							
Landlord Contr Misc	0					0								0							
Landlord Contr Furnace Landlord Contr DHW	0					0								0							
Client Contr (Any)	0					0	<u></u>							0							
Lead Safe Work Unspecifed/Other	0				-	0								0							
Onspecified/Office	1 0					U								U							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$215,359

	Numbe	er of Dwe	llings	Numbei	of Dwellings				Billing A	Adjusted F	irst-Year S	avings		Averaç			ted First Receivir			nd Savin	gs
		with Impac		with Elec	tricity Impacts	Spending on			lectricity				Gas	Spending on	-	-	Electricit	y			ias
Measure	Total	Electric	Gas	Seas Cooling		Materials & Labor (\$)	Sum kW	mer kWh	kW	inter kWh	Annual kWh	Pk-Day therms	Annual therms	Materials & Labor (\$)	Sumi kW	mer kWh	Win kW	ter kWh	Annual kWh	Pk-Day therms	Annual therms
Total Efficiency Measures	31	21	28	21	21	171,827	4.1		1.9		10,933	86	8,439	5,543	0.197		0.089		521	3.07	301
Total Shell & Htg. Sys. Repl	31	21	28	21	21	136,505	3.6	4,393	1.2	1,911	6,305	80	7,487	4,403	0.173	209	0.058	91	300	2.87	267
Total Shell Measures	31	21	28	21	21	78,878	3.6	4,393	1.2	1,821	6,214	49	4,539	2,544	0.173	209	0.056	87	296	1.74	162
Wall Insul. Open Blown Ceiling Insul.	13 25		12 23	10 18	0 0	20,984 16,286	1.2 1.1	1,394 1,310	0.0	0	1,394 1,310	16 8	1,446 766	1,614 651	0.116 0.060	139 73	0.000	0	139 73	1.29 0.36	121 33
Cavity Fill Insul.	12	9	12	9	0	6.228	0.4	520	0.0	0	520	6	537	519	0.048	58	0.000	0	58	0.30	45
Sloped Attic Insul.	8	7	7	7	Ō	2,783	0.4	472	0.0	Ō	472	5	431	348	0.056	67	0.000	ō	67	0.66	62
Kneewall Insul.	10		9	7	0	3,318	0.2	199	0.0	0	199	4	363	332	0.024	28	0.000	0	28	0.43	40
Infil. Reduction	31	17	28	17	1	12,944	0.1	127	0.1	188	314	6	578	418	0.006	7	0.120	188	18	0.22	21
Found./Crawl. Insul.	12		11	6	1	13,206	0.3	371	0.2	254	626	3	297	1,101	0.051	62	0.163	254	104	0.29	27
Bandjoist Insul.	17		16	-	1	3,129	0.0	0	0.1	101	101	1 (0)	133	184	0.000	0	0.065	101	101	0.09	8
Furnace Blower Fan ¹	30		28		20	0	0.0	0	0.8	1,277	1,277	(0)			0.000	0	0.041	64	64	(0.00)	(0)
Exhaust Ventilation Total Heating System Repl	0 21	<u>0</u>	20	0	0	57,627	0.0	0	0.0	0 91	91	32	2,948	0 2,744	0.000	- 0	0.058	91	91	1.58	147
Condensing Htg Sys Repl	20		20		- '	55,027	0.0	0	0.1	0	0	32	2,948	2,744	0.000	- 0	0.036	- 91	-	1.58	147
Non-Cond Htg Sys Repl	0	0	0	-	-	00,027	0.0	0	0.0	Ő	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	1	1	0	-	1	2,600	0.0	0	0.1	91	91	0	0	2,600	0.000	0	0.058	91	91	-	-
Heat Pump Repl	0		0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
	Total	Electric	Gas	by	per of Measures Fuel Type Electric Gas		Summer		Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms
Water Heating	26		23	42	4 38	30,290	0.0		0.0		285	5.5	952	1,165	0.000		0.002		95	0.240	41
Temp. Reduct.	0		0	0	0 0		0.0		0.0		0	0.0	0	0	-		-		-	-	-
WH Wrap	0		0	0	0 0		0.0		0.0		0	0.0	0	0	-		-		-	-	
Pipe Insul. LF Showerhead	25 0	2	23 0	25 0	2 23 0 0	250 0	0.0 0.0		0.0		84 0	0.3	97 0	10 0	0.000		0.000		42	0.01	4
Faucet Aerator	0		0	0	0 0		0.0		0.0		0	0.0	0	0							
Std-Eff Wtr Htr Repl.	Ō	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Hi-Eff or Electric Wtr Htr Repl.	21	2	19	17	2 15		0.0		0.0		201	5.2	856	1,430	0.000		0.002		100	0.28	45
Lighting	20			138	138	1,058	0.2		0.4		1,889	-	-	53	0.010		0.018		94	-	-
Refrigerator/Freezer ³	5			5	5	3,974	0.3		0.3		2,455	-	-	795	0.060		0.056		491	-	-
Refrigerator Removal Refrigerator Exchange	0 5			0 5	0 5	0 3,974	0.0 0.3		0.0 0.3		0 2,455	-	-	0 795	0.060		0.056		- 491	-	-
Freezer Removal	0	0		0	0	0,974	0.0		0.0		2,433			0	-		-		-		
Freezer Exchange	Ō	0		ō	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
						10 500	1							1 0 1 0							
Total Non-Efficiency Measures Misc Ins,Attic Access/Vent	33 21					43,533 3,575								1,319 170							
Duct Sealing	0					0,575								0							
Duct Insulation	0					0								0							
Damming Material	0					0								0							
Htg. Sys. Tune & Clean	7					875								125							
Htg. Sys./WH Other Air Conditioning Work	0					0								0							
Water Heater Repair	ő					ő								0							
Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat	0					0								0							
Unspecified Utility Meas. CO Detector	0					0								0							
Smoke Detector	0					0								0							
Fuses	0					0								0							
Htg Sys Safety Check	0					0								0							
Htg Sys Ventilation	23					5,326								232							
Water Heater Ventilation Bathroom Ventilation	20 0					3,744 0								187 0							
Dryer Ventilation	0					0								0							
Kitchen Ventilation	Ö					ő								Ö							
Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor)	0					0								0							
Health/Safety Repairs	2					38 0								19 0							
Health/Safety Other Consumables	0					0								0							
General Repairs	29					7,725								266							
Meter Refrig (no action)	13					0								0							
Meter Freezer (no action)	3					0								0							
Support	32					22,250								695							
Transportation Allowance Landlord Contr Misc	0					0								0							
Landlord Contr Misc Landlord Contr Furnace	0					0								0							
Landlord Contr DHW	0					ő								0							
Client Contr (Any)	0					0								0							
Lead Safe Work	0					0								0							
Unspecifed/Other	0					0								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

³ The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$150,970

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$150,970

	Numb	u of Durr	lingo	Numb-	r of Dwellin				Billing A	djusted F	irst-Year S	avings		Averag			sted First Receivir			nd Savin	gs
		er of Dwell with Impact			r of Dwellings ctricity Impacts	Spending on			Electricity			1	Gas	Spending on	her n/	wennig	Electricit				as
				Seas	son	Materials	Sum	nmer	Wi	nter	Annual	Pk-Day	Annual	Materials	Sum		Win	ter	Annual	Pk-Day	Annual
Measure	Total	Electric	Gas	Cooling	Heating	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms
Total Efficiency Measures	27	25	22	24	25	119,567	4.7		6.4		19,733	43	3,898	4,428	0.197		0.256		789	1.95	177
Total Shell & Htg. Sys. Repl	27	25	22	24	25	98,030	4.2	5,106	5.8	8,483	13,589	41	3,648	3,631	0.176	213	0.230	339	544	1.88	166
Total Shell Measures	27	25	22	24	25	48,030	4.2	5,106	5.7	8,440	13,546	21	1,853	1,779	0.176	213	0.229	338	542	0.96	84
Wall Insul. Open Blown Ceiling Insul.	11 17	10 16	9 13	10 16	2 3	11,066 16,140	1.4 1.9	1,740 2,276	0.4 3.6	600 5,296	2,339 7,572	5 10	403 882	1,006 949	0.144 0.118	174 142	0.203 1.197	300 1,765	234 473	0.51 0.77	45 68
Cavity Fill Insul.	2		1	2	Ö	557	0.1	131	0.0	0,230	131	0	13	279	0.054	65	0.000	0	65	0.15	13
Sloped Attic Insul.	6	5	5	5	1	3,192	0.3	403	0.3	422	825	2	199	532	0.067	81	0.286	422	165	0.45	40
Kneewall Insul.	3 26	3 23	2 21	3 23	1	1,345 10,308	0.0	31 289	0.0	31	62	0	5	448 396	0.009	10 13	0.021	31 56	21 20	0.03	3
Infil. Reduction Found./Crawl. Insul.	8	23	6	23	3 1	3,185	0.2 0.2	289	0.1 0.3	168 470	457 708	3	260 52	398	0.066	79	0.038 0.319	470	236	0.14 0.10	12 9
Bandjoist Insul.	13		12	-	i	2,237	0.0	0	0.1	114	114	0	43	172	0.000	0	0.078	114	114	0.04	4
Furnace Blower Fan ¹	24	22	22	-	22	0	0.0	0	0.9	1,338	1,338	(0)	(5)	0	0.000	0	0.041	61	61	(0.00)	(0)
Exhaust Ventilation	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	16	1	15	-	1	50,000	0.0	0	0.0	43	43		1,796		0.000	0	0.029	43	43	1.36	120
Condensing Htg Sys Repl Non-Cond Htg Sys Repl	15 0	0	15 0	-	-	46,500 0	0.0	0	0.0	0	0	20	1,796 0	3,100 0	-	-	-	-	-	1.36	120
Electric Htg Sys Repl	0		0	-	0	0	0.0	0	0.0	0	0	0	0	0						_	-
Heat Pump Repl	1	1	ō	-	1	3,500	0.0	0	0.0	43	43	0	0	3,500	0.000	0	0.029	43	43	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
					ber of Measures																
	Total	Electric	Gas	b Total	y Fuel Type Electric Gas		Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms
Water Heating	23	11	12	50	28 22	16,599	0.0		0.0		1,921	1.4	250	722	0.000		0.003		175		21
Temp. Reduct. WH Wrap	0	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Pipe Insul.	16	11	5	16	11 5	51	0.0		0.0		467	0.0	15	3	0.000		0.000		42	0.01	- 3
LF Showerhead	11	6	5	13	7 6	115	0.0		0.0		1,036	0.1	36	10	0.000		0.004		173	0.02	7
Faucet Aerator	10		5	14	9 5	33	0.0		0.0		292	0.0	7	3	0.000		0.001		58	0.00	1
Std-Eff Wtr Htr Repl. Hi-Eff or Electric Wtr Htr Repl.	0 12	0	0 11	0 7	0 0	0 16.400	0.0		0.0		0 126	0.0	0 192	0 1,367	0.000		0.003		126	0.11	- 17
Lighting	12	12	- ''	113	113	383	0.0		0.0		1,549	1.2	- 192	32	0.000		0.003		129	-	- 17
Refrigerator/Freezer ³	5			5	5	4,555	0.3		0.3		2,675	-	-	911	0.066		0.062		535	-	-
Refrigerator Removal	0	0		0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Refrigerator Exchange Freezer Removal	4 0	4		4	4 0	3,255 0	0.2 0.0		0.2		1,858 0	-	-	814 0	0.057		0.053		465	-	-
Freezer Exchange	2	2		2	2	1,300	0.0		0.0		817		-	650	0.050		0.047		408	-	
Total Non-Efficiency Measures	27					31,403								1,163							
Misc Ins,Attic Access/Vent	18					2,846								158							
Duct Sealing	3					530								177							
Duct Insulation Damming Material	1 0					76 0								76 0							
Htg. Sys. Tune & Clean	7					809								116							
Htg. Sys./WH Other	0					0								0							
Air Conditioning Work	0					0								0							
Water Heater Repair Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat	0					0								0							
Unspecified Utility Meas.	0					0								0							
CO Detector Smoke Detector	0					0								0							
Fuses	0					0								0							
Htg Sys Safety Check	0					0								0							
Htg Sys Ventilation Water Heater Ventilation	13 11					3,100 1,975								238 180							
Bathroom Ventilation	0					1,975								0							
Dryer Ventilation	0					0								0							
Kitchen Ventilation	0					0								0							
Other Exhaust Ventilation Asbestos Removal (Minor)	0					0								0							
Health/Safety Repairs	10					475								48							
Health/Safety Other	0					0								0							
Consumables	0 27					0		·						0							
General Repairs Meter Refrig (no action)	19					6,629 0								246							
Meter Freezer (no action)	9					0								0							
Support	27					14,963								554							
Transportation Allowance	0					0								0							
Landlord Contr Misc Landlord Contr Furnace	0					0								0							
Landlord Contr Purrace Landlord Contr DHW	0					0								0							
Client Contr (Any)	0					0								0							
Lead Safe Work Unspecifed/Other	0					0								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refligeration measure regiscements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$482,290

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$482,290

		er of Dwe			r of Dwellings					djusted F	irst-Year S						sted First Receivin	g Measi			
		with Impac		Seas		Spending on Materials	Sum	ımer	Electricity Wii		Annual	Pk-Day	Gas Annual	Spending on Materials	Sumi		Electricity	ter /		Pk-Day	Annual
Measure	Total	Electric	Gas	Cooling	Heating	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms
Total Efficiency Measures	62	54	52	54	54	436,248	17.4		4.4		30,663	191	16,888	7,036	0.322		0.081		568	3.67	325
Total Shell & Htg. Sys. Repl	62	54	52	54	54	377,517	16.7	20,191	3.5	4,944	25,135	181	15,208	6,089	0.310	374	0.065	92	465	3.47	292
Total Shell Measures Wall Insul.	62 44		52 40	54 38	54 0	258,808 112,180	16.7 6.7	20,191 8,049	3.5 0.0	4,944 0	25,135 8.049	107 49	8,976 4,162	4,174 2,550	0.310	374 212	0.065	92	465 212	2.05 1.24	173 104
Open Blown Ceiling Insul.	59	51	50	51	ő	77,173	6.2	7,448	0.0	0	7,448	28	2,390	1,308	0.121	146	0.000	0	146	0.57	48
Cavity Fill Insul.	16			14	0	17,415	1.1	1,299	0.0	0	1,299	8	687	1,088	0.077	93	0.000	0	93	0.54	46
Sloped Attic Insul. Kneewall Insul	28 19		25 17	23 17	0	12,409 6,259	1.3 0.3	1,566 383	0.0	0	1,566 383	10 2	811 154	443 329	0.056 0.019	68 23	0.000	0	68 23	0.39 0.11	32 9
Infil. Reduction	46		34	46	0	12,871	0.5	612	0.0	0	612	3	287	280	0.019	13	0.000	0	13	0.11	8
Found./Crawl. Insul.	27	9	26	9	0	16,777	0.7	834	0.0	0	834	4	321	621	0.077	93	0.000	ō	93	0.15	12
Bandjoist Insul.	30			-	0	3,725	0.0	0	0.0	0	0	2	185	124	-	-	-	-	-	0.07	6
Furnace Blower Fan	62		52	-	54	0	0.0	0	3.5	4,944	4,944	(0)	(22)	0	0.000	0	0.065	92	92	(0.00)	(0)
Exhaust Ventilation	0		0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl Condensing Htg Sys Repl	45 45		45 45	-	0	118,709 118,709	0.0	0	0.0	0	0	74 74	6,233 6,233	2,638 2.638	-	-	-	-	-	1.65 1.65	139 139
Non-Cond Htg Sys Repl	0			-		0	0.0	0	0.0	0	0	0	0,233	2,030		- 1	- 1		- [-	-
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0			-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	<u> </u>
					ber of Measures																
	Total	Electric	Gas		y Fuel Type Electric Gas		Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms
Water Heating	42		42	41	0 41	54.918	0.0		0.0		0	10.3	1,679	1.308	-		-		-	0.245	40
Temp. Reduct.	0	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
WH Wrap	0		0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Pipe Insul. LF Showerhead	0		0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-	-	-
Faucet Aerator	0	0	0	0	0 0		0.0		0.0		0	0.0	0	0					- [-	-
Std-Eff Wtr Htr Repl.	0		0	0	0 0	0	0.0		0.0		0	0.0	Ō	Ō	-		-		-	-	-
Hi-Eff or Electric Wtr Htr Repl.	42		42	41	0 41	54,918	0.0		0.0		0	10.3	1,679	1,308	-		-		-	0.25	40
Lighting	27			232	232	333	0.3		0.6		3,005	-	-	12	0.012		0.022		111	-	-
Refrigerator/Freezer ³ Refrigerator Removal	5 0	5 0		5	5 0	3,480	0.3		0.3		2,523	-	-	696 0	0.062		0.058		505	-	-
Refrigerator Exchange	4	4		4	4	2,850	0.2		0.2		1,989	_	-	713	0.061		0.057		497	-	-
Freezer Removal	0	0		0	0	0	0.0		0.0		0	-	-	0	-					-	-
Freezer Exchange	1	1		1	11	630	0.1		0.1		534	-		630	0.066		0.061		534	-	
Total Non-Efficiency Measures	62					46,042								743							
Misc Ins,Attic Access/Vent	2					294								147 0							
Duct Sealing Duct Insulation	0					0								0							
Damming Material	ő					0								Ö							
Htg. Sys. Tune & Clean	3					289								96							
Htg. Sys./WH Other	0					0								0							
Air Conditioning Work Water Heater Repair	0					0								0							
Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat	0					0								0							
Unspecified Utility Meas. CO Detector	0					0								0							
Smoke Detector	0					0								0							
Fuses	0					0								0							
Htg Sys Safety Check	0					1 727								0							
Htg Sys Ventilation Water Heater Ventilation	9					1,737 0								193 0							
Bathroom Ventilation	ő					0								Ö							
Dryer Ventilation	0					0								0							
Kitchen Ventilation	0					0								0							
Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor) Health/Safety Repairs	42					54,918								1,308							
Health/Safety Other	0					0 1,5 1.0								0							
Consumables	0					0								0							
General Repairs	0					0								0							
Meter Refrig (no action) Meter Freezer (no action)	1 0					0								0							
Support	62					43,722								705							
Transportation Allowance	0					0								0							
Landlord Contr Misc	0					0								0							
Landlord Contr Furnace Landlord Contr DHW	0					0								0							
Client Contr (Any)	0					0								0							
Lead Safe Work	0					0								0							
Unspecifed/Other	0					0								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$310,986

	Numbe	r of Dwe	llings	Number	of Dwellings				Billing A	djusted F	irst-Year S	avings		Averag			ted First Receivin			nd Saving	js
	١	with Impac	ts	Seaso		Spending on Materials	Sum	nmer		nter	Annual	Pk-Day	Gas Annual	Spending on Materials	Sumn	ner	Electricity Wint	er		Pk-Day	as Annual
Measure	Total	Electric	Gas	Cooling	Heating	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms
Total Efficiency Measures	67	66	50	65	66	245,106	15.2		13.9		50,313	129	11,673	3,658	0.233		0.211		762	2.58	233
Total Shell & Htg. Sys. Repl	67	65	50		64	209,248	13.6	16,406	11.4	16,806	33,212	125	11,031	3,123	0.223	269	0.178	263	511	2.51	221
Total Shell Measures Wall Insul.	67 38	65 33	50 28		64	134,148 50,234	13.6 5.0	16,406 6,001	11.2 3.1	16,580 4.609	32,986 10,610	83 36	7,302 3,199	2,002 1,322	0.223	269 182	0.176	259 1,152	507 322	1.66	146 114
Open Blown Ceiling Insul.	55	50	42		5	46,437	5.6	6,792	3.0	4,355	11,147	24	2,080	844	0.113	136	0.701	871	223	0.56	50
Cavity Fill Insul.	7	7	6	6	1	4,415	0.6	764	1.2	1,707	2,471	4	392	631	0.106	127	1.158	1,707	353	0.74	65
Sloped Attic Insul.	14	13	9		2	4,580	0.7	894	0.6	880	1,775	6	551	327	0.057	69	0.298	440	137	0.70	61
Kneewall Insul. Infil. Reduction	12 65	11 53	7 50	11 53	1 6	2,181 14,307	0.4	470 384	0.3 0.2	443 240	913 624	2	183 330	182 220	0.035 0.006	43 7	0.300 0.027	443 40	83 12	0.30 0.07	26 7
Found /Crawl Insul	30	15	26	14	2	6,720	0.3	1,100	0.2	486	1,586	3	293	220	0.006	79	0.027	243	106	0.07	11
Bandjoist Insul.	33	3			3	5,274	0.0	0	0.4	607	607	3	292	160	0.000	0	0.137	202	202	0.11	10
Furnace Blower Fan ¹	59	57	50	-	57	0	0.0	0	2.2	3,253	3,253	(0)	(18)	0	0.000	0	0.039	57	57	(0.00)	(0)
Exhaust Ventilation	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	27	2	25	-	2	75,100	0.0	0	0.2	226	226	42	3,729	2,781	0.000	0	0.077	113	113	1.69	149
Condensing Htg Sys Repl Non-Cond Htg Sys Repl	25 0	0	25 0	-	-	70,700 0	0.0 0.0	0	0.0 0.0	0	0	42 0	3,729 0	2,828	-	-	-	-	-	1.69	149
Electric Htg Sys Repl	2	2	0		2	4,400	0.0	0	0.0	226	226	0	0	2,200	0.000	- 0	0.077	113	113		-
Heat Pump Repl	0	0		-	0	0	0.0	ő	0.0	0	0	ő	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-		-	-	-	-	-
				Numb	er of Measures																
				by	Fuel Type		Summer		Winter		Annual	Pk-Day	Annual		Summer		Winter		Annual		Annual
Make Heating	Total 59	Electric 33	Gas 26	Total 97	Electric Gas	3 29.357	kW		kW		kWh	therms	therms 642	400	kW		kW		kWh 83	therms	therms
Water Heating Temp. Reduct.	0	0	26	0		3 29,357 0 0	0.0		0.0		2,730	0.0	042	498 0	0.000		0.001		- 83	0.137	25
WH Wrap	ő	Ö	Ö	0	0		0.0		0.0		ő	0.0	0	o o	-		-		-	-	-
Pipe Insul.	56	32	24	56	32 2		0.0		0.0		1,353	0.3	101	6	0.000		0.000		42	0.01	4
LF Showerhead	3	2	1 5	3		1 26 7 94	0.0		0.0		350	0.0	7	9	0.000		0.004		175	0.02	7
Faucet Aerator Std-Eff Wtr Htr Repl.	16 0	11 0	0	24 0		7 94 0 0	0.0		0.0		554 0	0.0	13 0	6	0.000		0.001		50	0.01	-
Hi-Eff or Electric Wtr Htr Repl.	21	4	17	14	4 1		0.0		0.0		473	3.2	521	1,376	0.000		0.003		118	0.19	31
Lighting	37	37		377	377	1,411	1.1		2.1		10,904	-	-	38	0.031		0.057		295	-	-
Refrigerator/Freezer ³	6	6		7	7	5,090	0.4		0.4		3,467	-	-	848	0.071		0.066		578	-	-
Refrigerator Removal Refrigerator Exchange	0 5	0 5		0 5	0 5	0 4,092	0.0 0.3		0.0		0 2,399	-	-	0 818	0.059		0.055		480	-	-
Freezer Removal	0	0		0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Freezer Exchange	2	2		2	2	998	0.1		0.1		1,068	-	-	499	0.066		0.061		534	-	-
Total Non-Efficiency Measures	66					65,880								998							
Misc Ins,Attic Access/Vent	24					2,454								102							-
Duct Sealing	0					0								0							
Duct Insulation Damming Material	0					0								0							
Htg. Sys. Tune & Clean	13					1,610								124							
Htg. Sys./WH Other	0					0								0							
Air Conditioning Work	0					0								0							
Water Heater Repair Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat	ő					0								o o							
Unspecified Utility Meas.	0					0								0							
CO Detector Smoke Detector	0					0								0							
Fuses	0					0								0							
Htg Sys Safety Check	0					0								0							
Htg Sys Ventilation	17					3,700								218							
Water Heater Ventilation Bathroom Ventilation	11 0					1,600 0								145 0							
Dryer Ventilation	0					0								0							
Kitchen Ventilation	0					0								0							
Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor) Health/Safety Repairs	0 9					723								0 80							
Health/Safety Other	0					0								0							
Consumables	0					0								0							
General Repairs	55					15,934								290							
Meter Refrig (no action) Meter Freezer (no action)	0					0 0								0							
Support	65					39,859								613							
Transportation Allowance	0					0								0							
Landlord Contr Misc	0					0								0							
Landlord Contr Furnace Landlord Contr DHW	0					0								0							
Client Contr (Any)	0					0								0							
Lead Safe Work	0					0								0							
Unspecifed/Other	0					0								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refligeration measure regiscements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$338,744

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$338,744

									Billing A	Adjusted F	irst-Year S	avings		Avera	ge Billing					nd Savin	gs
		er of Dwe			r of Dwellings tricity Impacts	Spending on			Electricity	,			Gas	Spending on	per Dw	elling	Receivin Electricity		ures		as
Measure	Total	Electric		Seas Cooling	on	Materials & Labor (\$)	Sumi kW			inter kWh	Annual kWh	Pk-Day therms	Annual therms	Materials & Labor (\$)	Sumr kW	ner kWh	Wint	er .		Pk-Day therms	Annual therms
Total Efficiency Measures	54	36		35	36	289,578	6.5		2.6		16,827	87	8,872	5,363			0.073		467		193
Total Shell & Htg. Sys. Repl Total Shell Measures	54 54	35 35	46 46	30 30	35 35	232,932 147,818	5.9 5.9	7,118 7,118		3,059 3,059	10,177	82 50	8,030 4,886	4,314 2,737	0.197 0.197	237	0.054	87 87	291 291	1.79	175 106
Wall Insul.	41	24	37	24	0	68,619	2.7	3,244	0.0	0	3,244	26	2,493	1,674	0.112	135	0.000	0	135	0.69	67
Open Blown Ceiling Insul.	41	25	35	25	0	19,092	1.6	1,940	0.0	0	1,940	6	542	466	0.064	78	0.000	0	78	0.16	15
Cavity Fill Insul.	20	11	17	11	0	11,578	0.6	766		0	766	6	587	579	0.058	70	0.000	0	70	0.35	35
Sloped Attic Insul. Kneewall Insul.	18 7	10 4	16 5	10 4	0	6,294 1,617	0.5 0.1	546 114		0	546 114	6	540 73	350 231	0.045 0.024	55 29	0.000	0	55 29	0.35 0.15	34 15
Infil. Reduction	51	28	43	28	0	16,713	0.1	387		0	387	3	318	328		14	0.000	0	14	0.13	7
Found./Crawl. Insul.	21	2	19	2	Ō	16,755	0.1	120		0	120	3	263	798	0.050	60	0.000	0	60	0.14	14
Bandjoist Insul.	28	0		-	0	7,150	0.0	0		0	0	1	86	255	-	-	-	-	-	0.03	3
Furnace Blower Fan ¹	54	35	46	-	35	0	0.0	0	1.9	3,059	3,059	(0)	(16)	0	0.000	0	0.054	87	87	(0.00)	(0)
Exhaust Ventilation	0	0	0	0	0	0	0.0	0		0	0	0	0	0	-	-	-	-	-	-	-
Total Heating System Repl	34	0		-	0	85,114	0.0	0		0	0	32	3,144	2,503	-	-	-	-	-	0.95	92
Condensing Htg Sys Repl	34	0	34	-	-	85,114 0	0.0	0		0	0	32	3,144 0	2,503	-	-	-	-	-	0.95	92
Non-Cond Htg Sys Repl Electric Htg Sys Repl	0	0		-	0	0	0.0 0.0	0		0	0	0	0	0	-		-	-	-	-	
Heat Pump Repl	0		0	_	0	0	0.0	0		0	0	0	0	o o	_	-	-	_	_	_	_
Other Htg Sys Repl	0	0	0	-	Ō	0	0.0	0		0	0	0	Ō	0	-	-	-	-	-	-	-
				Num	ber of Measures																
	Total	Electric	Gas	by	Fuel Type Electric Gas		Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW			Pk-Day therms	Annual therms
Water Heating	48	14		85	22 63	49,310			0.0		1,595	4.9	842	1,027			0.002			0.144	25
Temp. Reduct.	0	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0	-		-		-		-
WH Wrap	0	0		0	0 0	0	0.0		0.0		0	0.0	0	0							
Pipe Insul.	48	14	34	48 0	14 34 0 0	960 0	0.0		0.0		588	0.2	83	20	0.000		0.000		42	0.01	2
LF Showerhead Faucet Aerator	0	0	0	0	0 0	0	0.0		0.0		0	0.0	0	0	-				-	-	
Std-Eff Wtr Htr Repl.	0		0	0	0 0	0	0.0		0.0		0	0.0	0	o o	_		-		_	-	_
Hi-Eff or Electric Wtr Htr Repl.	39	8	31	37	8 29	48,350	0.0		0.0		1,007	4.7	760	1,240	0.000		0.003		126	0.15	25
Lighting	32	32		234	234	1,638	0.2		0.4		1,926	-	-	51			0.012		60	-	-
Refrigerator/Freezer ³	7	7		6	6	5,698	0.4		0.4		3,130	-	-	814	0.055		0.051		447	-	-
Refrigerator Removal	0 7	0 7		0	0 5	0 5,075	0.0 0.3		0.0 0.3		0 2,596	-	-	725	0.046		0.043		- 371	-	-
Refrigerator Exchange Freezer Removal	ó	0		5 0	0	5,075	0.3		0.0		2,596	_		725	0.046		0.043		3/1	-	
Freezer Exchange	1	1		1	1	623	0.1		0.1		534	-	-	623	0.066		0.061		534	-	-
Total Non-Efficiency Measures	54					49,167								910							
Misc Ins,Attic Access/Vent	29					3,014								104							
Duct Sealing	0					0								0							
Duct Insulation	3					1,220								407							
Damming Material	0 11					0								0							
Htg. Sys. Tune & Clean Htg. Sys./WH Other	0					1,300								118							
Air Conditioning Work	0					0								o o							
Water Heater Repair	0					0								0							
Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat Unspecified Utility Meas.	0					0								0							
CO Detector	0					0								0							
Smoke Detector	0					0								0							
Fuses	0					0								0							
Htg Sys Safety Check	0					0								0							
Htg Sys Ventilation Water Heater Ventilation	17 17					3,098 1,891								182 111							
Bathroom Ventilation	0					0								, iii							
Dryer Ventilation	0					0								ō							
Kitchen Ventilation	0					0								0							
Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor)	0					0								0							
Health/Safety Repairs Health/Safety Other	15 0					780 0								52							
Consumables	0					0								0							
General Repairs	23					4,316								188							
Meter Refrig (no action)	0					0								0	1						
Meter Freezer (no action)	0					0								0							
Support	54					33,548 0								621							
Transportation Allowance Landlord Contr Misc	0					0								0							
Landlord Contr Nisc	0					0								0							
Landlord Contr DHW	0					ő								ŏ							
Client Contr (Any)	0					0								0							
Lead Safe Work	0					0								0							
Unspecifed/Other	11 0					0	l							0	l						

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refligeration measure regiscements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Total Reported Labor, Materials and Utility Admin Expenditures: \$310,246

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$310,246

				1		I			Billing A	djusted F	irst-Year S	avings		Averag			ted First			nd Savin	gs
		er of Dwe			of Dwellings							ı	_		per Dv		Receivin		ures		ias
	1	with Impac	its	Seas	tricity Impacts on	Spending on Materials	Sum		Electricity Wi	nter	Annual	Pk-Day	Gas Annual	Spending on Materials	Sum		Electricity Win		Annual	Pk-Day	Annual
Measure	Total	Electric	Gas	Cooling	Heating	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms	& Labor (\$)	kW	kWh	kW	kWh	kWh	therms	therms
Total Efficiency Measures	53	48	41	47	48	243,084	13.3		7.5		36,322	85	7,785	4,586	0.282		0.157		757	2.08	190
Total Shell & Htg. Sys. Repl	52	47	41	42	47	189,106	11.9	14,326	5.5	7,934	22,259	81	6,944	3,637	0.283	341	0.117	169	474	1.97	169
Total Shell Measures	52	47	41	42	47	96,627	11.9	14,326	5.5	7,934	22,259	36	3,063	1,858	0.283	341	0.117	169	474	0.87	75
Wall Insul.	34		29	28	2	36,911	4.9	5,850	1.1	1,641	7,491	16	1,375	1,086	0.173	209	0.568	821	268	0.55	47
Open Blown Ceiling Insul. Cavity Fill Insul.	47 6		38 4	38 6	3 1	27,821 2,723	4.9 0.5	5,940 565	2.4 0.1	3,475 136	9,416 700	9	765 88	592 454	0.130 0.078	156 94	0.802 0.094	1,158 136	248 117	0.23 0.25	20 22
Sloped Attic Insul.	18		14	14	1	6,466	1.1	1,325	0.6	908	2,233	5	395	359	0.078	95	0.629	908	160	0.23	28
Kneewall Insul.	12	7	8	7	1	1,889	0.1	141	0.1	184	325	0	35	157	0.017	20	0.128	184	46	0.05	4
Infil. Reduction	51	19	41	19	3	16,002	0.3	411	0.2	310	721	4	309	314	0.018	22	0.072	103	38	0.09	8
Found./Crawl. Insul.	13 18		12 17	1	1	3,392 1,423	0.1 0.0	93 0	0.1 0.0	85 26	179 26	1	57 46	261 79	0.077	93 0	0.059 0.018	85 26	89 26	0.06	5 3
Bandjoist Insul. Furnace Blower Fan ¹	49		41	-	44	1,423	0.0	0	0.0	1,169	1,169	(0)			0.000	0	0.018	27	27	(0.00)	(0)
Exhaust Ventilation	0	0	0	0	0	0	0.0	0	0.0	0	1,103	0	0	0	0.000	-	0.010			(0.00)	(0)
Total Heating System Repl	32		32		0	92,479	0.0	0	0.0	0	0	45	3,881	2,890	-	-	-	-	-	1.41	121
Condensing Htg Sys Repl	32	0	32	-	-	92,479	0.0	0	0.0	0	0	45	3,881	2,890	-	-	-	-	-	1.41	121
Non-Cond Htg Sys Repl	0		0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl Heat Pump Repl	0		0	-	0	0	0.0 0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0		0	0	0.0	0	0.0	0	0	0	0	0						-	
				by	ber of Measures Fuel Type		Summer		Winter		Annual	Pk-Day	Annual		Summer		Winter		Annual	Pk-Day	Annual
Water Heating	Total 44	Electric 13	Gas 31		Electric Gas 31 92	44,278	kW 0.0		kW		kWh 1,710	therms 4.6	therms 841	1,006	kW 0.000		kW 0.002		kWh 132	0.150	therms 27
Temp. Reduct.	0	0	0	0	0 0	0	0.0		0.0		0	0.0	041	0	-		-		-	-	-
WH Wrap	0		0	0	0 0		0.0		0.0		0	0.0	0	0	-		-		-	-	-
Pipe Insul.	37		26	37	11 26		0.0		0.0		465	0.2	68	19	0.000		0.000		42	0.01	3
LF Showerhead Faucet Aerator	11 34		9 23	11 51	2 9 15 36	110 255	0.0		0.0		350 488	0.2 0.1	57 45	10 8	0.000		0.004 0.001		175 44	0.02	6 2
Std-Eff Wtr Htr Repl.	0		0	0	0 0	0	0.0		0.0		0	0.0	0	o o	-		-			-	
Hi-Eff or Electric Wtr Htr Repl.	30	4	26	24	3 21	43,193	0.0		0.0		407	4.1	671	1,440	0.000		0.003		102	0.16	26
Lighting	36			371	371	2,748	0.8		1.5		7,563	-	-	76	0.022		0.041		210	-	-
Refrigerator/Freezer³ Refrigerator Removal	9			9	9	6,952	0.6		0.6		4,790	-	-	772 0	0.065		0.061		532	-	-
Refrigerator Exchange	7	7		7	7	5,652	0.4		0.4		3,304	-	- 1	807	0.058		0.054		472	-	
Freezer Removal	0	0		0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Freezer Exchange	2	2		3	3	1,300	0.2		0.2		1,485	-	-	650	0.091		0.085		743	-	
Total Non-Efficiency Measures	53					67,161								1,267							
Misc Ins,Attic Access/Vent Duct Sealing	41					4,598 0								112 0							
Duct Insulation	39					2,148								55							
Damming Material	0					0								0							
Htg. Sys. Tune & Clean	11					1,600								145							
Htg. Sys./WH Other Air Conditioning Work	0					0								0							
Water Heater Repair	0					0								0							
Refrigerator Coil Clean	0					ő								Ö							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat Unspecified Utility Meas.	0					0								0							
CO Detector	0					0								0							
Smoke Detector	0					0								0							
Fuses	0					0								0							
Htg Sys Safety Check Htg Sys Ventilation	33					7,175								0 217							
Water Heater Ventilation	24					5,150								215							
Bathroom Ventilation	0					0								0							
Dryer Ventilation	0					0								0							
Kitchen Ventilation Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor)	0					0								0							
Health/Safety Repairs	23					1,406								61							
Health/Safety Other	0					0								0							
Consumables General Repairs	0 51					0 12,727								0 250							
Meter Refrig (no action)	0					0								0							
Meter Freezer (no action)	0					0								0							
Support Transportation Allowance	52					32,357 0								622							
Transportation Allowance Landlord Contr Misc	0					0								0							
Landlord Contr Furnace	0					ő								ő							
Landlord Contr DHW	0					0								0							
Client Contr (Any) Lead Safe Work	0					0								0							
Unspecifed/Other	0					0								0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refrigeration measure replacements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Utility Administration Expenditures:

Total Labor and Material Expenditures: \$186,095

	Numbe	er of Dwe	llinas	Number	of Dwellings			ı	Billing A	Adjusted F	irst-Year S	avings		Averaç			ted First Receivin			nd Savin	gs
		with Impac			ricity Impacts	Spending on		E	Electricity				Gas	Spending on	•		Electricity	y			as
Measure	Total	Electric	Gas	Seas Cooling		Materials & Labor (\$)	Sum kW	mer kWh	kW	inter kWh	Annual kWh	Pk-Day therms	Annual therms	Materials & Labor (\$)	Sumi kW	mer kWh	Win kW	ter kWh	Annual kWh	Pk-Day therms	Annual therms
Total Efficiency Measures	39	35	32	35	35	166,714	7.7		10.0		36,358	70	6,783	4,275	0.221		0.285		1,039	2.20	212
Total Shell & Htg. Sys. Repl	37	33	30	31	33	129,783	5.9	7,134	7.6	11,656	18,790	67	6,125	3,508	0.191	230	0.231	353	569	2.24	204
Total Shell Measures Wall Insul.	37	33 12	30 12	31 12	33	69,883	5.9 1.7	7,134	7.6	11,656 640	18,790	37 9	3,334	1,889	0.191	230 167	0.231	353 640	569 221	1.22 0.79	111 72
Vall Insul. Open Blown Ceiling Insul.	14 35	12 30	12 28	30	1 4	17,621 37,412	3.3	4,033	0.4 4.1	6,267	2,648 10,301	21	863 1,921	1,259 1,069	0.139	134	1.025	1,567	343	0.79	72 69
Cavity Fill Insul.	6	5	3	5	2	2,724	0.5	580	1.4	2,073	2,654	2	215	454	0.096	116	0.678	1,037	531	0.78	72
Sloped Attic Insul.	4	3	4	3	0	1,072	0.2	238	0.0	0	238	2	163	268	0.066	79	0.000	0	79	0.45	41
Kneewall Insul.	1	1	1	1	0	404	0.0	50	0.0	0	50	0	29	404	0.042	50	0.000	0	50	0.32	29
Infil. Reduction Found /Crawl. Insul.	0	0	0 7	0	0	0 8.346	0.0	0 224	0.0	0	0 224	0	0 112	0 927	0.062	- 75	0.000	- 0	- 75	- 0.18	- 16
Bandjoist Insul.	7	0	7	_ 3	0	2,304	0.2	0	0.0	0	0	0	43	329	0.002	- 13	0.000	-	- 73	0.16	6
Furnace Blower Fan ¹	33	29	30		29	0	0.0	0	1.7	2,675	2,675	(0)			0.000	- 0	0.060	92	92	(0.00)	(0)
Exhaust Ventilation	0	0	0	0	0	0	0.0	0	0.0	2,070	2,070	0	0	0	0.000	-	0.000	- 52	- 52	(0.00)	(0)
Total Heating System Repl	20	0	20		0	59,900	0.0	0	0.0	0	0		2,792	2,995	-	-	-	-	-	1.53	140
Condensing Htg Sys Repl	20	0	20	-	-	59,900	0.0	0	0.0	0	0	31	2,792	2,995	-	-	-	-	-	1.53	140
Non-Cond Htg Sys Repl	0	0	0	-		0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl Heat Pump Repl	0	0	0	-	0	0	0.0 0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0		0	0	0.0	0	0.0	0	0	0	0	0		-				-	-
Carlot Fing Cyc Frobi	Ů					ű	0.0		0.0					Ů							
				by	er of Measures Fuel Type		Summer		Winter		Annual	Pk-Day	Annual		Summer		Winter		Annual		Annual
Water Heating	Total 34	Electric 10	Gas 24		Electric Gas 19 59	22,505	kW		kW		kWh 1,777	therms 3.2	therms 657	662	kW 0.000		kW 0.003		kWh 178	0.135	therms 27
Temp. Reduct.	0	0	0	0	0 0		0.0		0.0		1,777	0.0	037	002	-		-		-	-	-
WH Wrap	ő		ő	ő	0 0		0.0		0.0		ő	0.0	Ö	ő	-		-		-	-	-
Pipe Insul.	32	8	24	32	8 24		0.0		0.0		342	0.3	89	19	0.000		0.000		43	0.01	4
LF Showerhead	24	5	19 3	29 4	6 23		0.0		0.0		878	0.5	167	12	0.000		0.004		176	0.03	9
Faucet Aerator Std-Eff Wtr Htr Repl.	4 0	0	0	0	1 3	20 0	0.0		0.0		32 0	0.0	5 0	5 0	0.000		0.001		32	0.01	2
Hi-Eff or Electric Wtr Htr Repl.	16	5	11	13	4 9	21,595	0.0		0.0		524	2.4	396	1,350	0.000		0.003		105	0.22	36
Lighting	34	34		342	342	2,458	0.7		1.2		6,275	-	-	72	0.019		0.036		185		-
Refrigerator/Freezer ³	19			19	19	11,968	1.2		1.1		9,516	-	-	630	0.062		0.058		501	-	-
Refrigerator Removal	0	0		0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Refrigerator Exchange Freezer Removal	18 0	18 0		18 0	18 0	11,385	1.1 0.0		1.0 0.0		8,982 0	-	-	633	0.061		0.057		499	-	-
Freezer Exchange	1	1		1	1	583	0.0		0.0		534			583	0.066		0.061		534	-	-
Total Non-Efficiency Measures Misc Ins,Attic Access/Vent	30					19,381 85								646 85							
Duct Sealing	0					0								0							
Duct Insulation	0					0								0							
Damming Material	0					0								0							
Htg. Sys. Tune & Clean Htg. Sys./WH Other	0					0								0							
Air Conditioning Work	0					0								0							
Water Heater Repair	0					0								0							
Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat Unspecified Utility Meas.	0					0								0							
CO Detector	0					0								0							
Smoke Detector	0					0								0							
Fuses	0					0								0							
Htg Sys Safety Check Htg Sys Ventilation	1					105								105							
Water Heater Ventilation	1					160								160							
Bathroom Ventilation	0					0								0							
Dryer Ventilation	0					0								0							
Kitchen Ventilation Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor)	0					0								0							
Health/Safety Repairs	16					21,595								1,350							
Health/Safety Other	0					0								0							
Consumables	0					0								0							
General Repairs Meter Refrig (no action)	14					0								0							
Meter Freezer (no action)	9					0								0							
Support	25					19,031								761							
Transportation Allowance	0					0								0							
Landlord Contr Misc Landlord Contr Furnace	0					0								0							
Landlord Contr Furnace Landlord Contr DHW	0					0								0							
Client Contr (Any)	0					0								0							
Lead Safe Work	0					0								0							
Unspecifed/Other	0					0	1							0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refligeration measure regiscements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

Billing Adjusted Costs and Impacts for Utility-Funded Measures Installed During Calendar Year 2016

Utility Administration Expenditures: -

Total Labor and Material Expenditures: \$624,551

	Numbe	r of Dwel	llinge	Number	of Dwellings			I	Billing A	djusted F	irst-Year S	avings		Averag			ted First			nd Savin	gs
		vith Impact			ricity Impacts	Spending on		E	lectricity			1	Gas	Spending on	po. 2.		Electricit				as
Measure	Total	Electric	Gas	Seas	on	Materials	Sum kW	mer kWh	Wi kW	nter kWh	Annual kWh	Pk-Day therms	Annual therms	Materials	Sum: kW	mer kWh	Win kW	ter kWh	Annual kWh	Pk-Day therms	Annual therms
				Cooling		& Labor (\$)		KVVII		KWN				& Labor (\$)		KVVN		KVVN			
Total Efficiency Measures	110	110	99	107	110	559,652	23.6		20.4		76,469	263	24,853	5,088	0.221		0.185		695	2.66	251
Total Shell & Htg. Sys. Repl	102	102	98	82	102	442,206	20.8	25,040	16.4	24,400	49,440	248	22,123	4,335	0.253	305	0.160	239	485	2.53	226
Total Shell Measures	102	102	98	82	102	314,856	20.8	25,040	16.4	24,400	49,440	172	15,321	3,087	0.253	305	0.160	239	485	1.75	156
Wall Insul.	68	58	67	58	1	143,637	8.8	10,626	1.9	2,776	13,402	58	5,188	2,112	0.152	183	1.892	2,776	231	0.87	77
Open Blown Ceiling Insul. Cavity Fill Insul.	88 58	77 49	84 55	76 48	4	84,652 26.275	7.8 1.5	9,360 1,808	3.7 0.7	5,590 976	14,951 2,785	72 15	6,454	962 453	0.102	123 38	0.926	1,398 325	194 57	0.86 0.28	77 25
Sloped Attic Insul.	31	49 29	30	48 29	3 1	14,814	1.5	1,808	0.7	654	2,785	11	1,380 975	453 478	0.031	38 48	0.217	654	71	0.28	25 33
Kneewall Insul.	35	33	34	33	i	13,360	0.7	846	0.6	815	1,661	7	639	382	0.040	26	0.555	815	50	0.30	19
Infil. Reduction	0	0	0	0	o O	0	0.0	0	0.0	0.0	0	0	0	0	-	-	-	-	-	-	-
Found./Crawl. Insul.	44	14	43	13	1	32,120	0.8	1,009	0.1	88	1,097	8	733	730	0.064	78	0.060	88	78	0.19	17
Bandjoist Insul.	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Furnace Blower Fan ¹	98	98	98	-	98	0	0.0	0	9.1	13,501	13,501	(1)	(49)	0	0.000	0	0.092	138	138	(0.01)	(1)
Exhaust Ventilation	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	-	_	-	_	_	_	- '
Total Heating System Repl	60	0	60	-	0	127,350	0.0	0	0.0	0	0		6,802	2,122	-	-	-	-	-	1.27	113
Condensing Htg Sys Repl	60	0	60	-	-	127,350	0.0	0	0.0	0	0		6,802	2,122	-	-	-	-	-	1.27	113
Non-Cond Htg Sys Repl	0	0	0	-	-	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Electric Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Heat Pump Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
Other Htg Sys Repl	0	0	0	-	0	0	0.0	0	0.0	0	0	0	0	0	-	-	-	-	-	-	-
				Numb	er of Measures																
	Total	Electric	Gas	by Total	Fuel Type Electric Gas		Summer		Winter kW		Annual kWh	Pk-Day therms	Annual therms		Summer kW		Winter kW		Annual kWh	Pk-Day therms	Annual therms
Water Heating	99	13	86	326	38 288	97,570	0.0		0.0		1,732	15.0	2,730	986	0.000		0.002		133	0.174	32
Temp. Reduct.	0	0	0	0	0 0		0.0		0.0		0	0.0	0	0	-		-		-	-	-
WH Wrap	0	0	0	0	0 0		0.0		0.0		0	0.0	0	0	-		-		-	-	-
Pipe Insul.	93	13	80	93	13 80		0.0		0.0		554	0.7	235	17	0.000		0.000		43	0.01	3
LF Showerhead	25 78	2	23 67	26 147	2 24 22 125	255 693	0.0		0.0		343	0.5	164 175	10	0.000		0.004		171 65	0.02	7
Faucet Aerator Std-Eff Wtr Htr Repl.	/8 0	11 0	67	147	0 0	693	0.0		0.0		719 0	0.6 0.0	1/5	9	0.000		0.001		65	0.01	3
Hi-Eff or Electric Wtr Htr Repl.	66	1	65	60	1 59		0.0		0.0		116	13.2	2,156	1,440	0.000		0.003		116	0.20	33
Lighting	90	90	- 00	905	905	6,412	1.5		2.7		13,817	-	-	71	0.016		0.030		154	-	-
Refrigerator/Freezer ³	23	23		23	23	13,464	1.4		1.3		11,480	-	-	585	0.061		0.057		499		_
Refrigerator Removal	0	0		0	0	10,404	0.0		0.0		0	-	-	0	- 0.001		-		-	-	-
Refrigerator Exchange	23	23		23	23	13,464	1.4		1.3		11,480	-	-	585	0.061		0.057		499	-	-
Freezer Removal	0	0		0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Freezer Exchange	0	0		0	0	0	0.0		0.0		0	-	-	0	-		-		-	-	-
Total Non-Efficiency Measures	106					64,899								612							
Misc Ins,Attic Access/Vent	100					1,062								1,062							
Duct Sealing	0					0								0							
Duct Insulation	0					0								0							
Damming Material	0					0								0							
Htg. Sys. Tune & Clean	22					2,750								125							
Htg. Sys./WH Other	0					0								0							
Air Conditioning Work	0					0								0							
Water Heater Repair Refrigerator Coil Clean	0					0								0							
Waterbed Mattress Pad	0					0								0							
Programmable Tstat	0					0								ő							
Unspecified Utility Meas.	0					0								0							
CO Detector	0					0								0							
Smoke Detector	0					0								0							
Fuses	0					0								0							
Htg Sys Safety Check	0 48					7 472								0							
Htg Sys Ventilation Water Heater Ventilation	48 45					7,472 6,644								156 148							
Bathroom Ventilation	45					0,644								148							
Dryer Ventilation	0					0								0							
Kitchen Ventilation	0					0								ő							
Other Exhaust Ventilation	0					0								0							
Asbestos Removal (Minor)	0					0								0							
Health/Safety Repairs	66					95,065								1,440							
Health/Safety Other	0					0								0							
Consumables	0					0								0							
General Repairs	0					0								0							
Meter Refrig (no action)	0					0								0							
Meter Freezer (no action) Support	67					46,970								701							
Transportation Allowance	0					46,970								701							
Landlord Contr Misc	0					0								ő							
Landlord Contr Furnace	Ö					ő								0							
Landlord Contr DHW	0					0								0							
Client Contr (Any)	0					0								0							
Lead Safe Work	0				-	0								0							
Unspecifed/Other	0					0	1							0							

¹ Estimates are based upon reduced usage of the furnace due to shell improvements

² Impacts from continuous exhaust fans required by ASHRAE 62.2. The winter impacts exceed summer because these also include heating season impacts for dwellings with electric heat.

The total number of dwellings may exceed the number of measures installed in cases where the utility partially funds refligeration measure regiscements. The percentage of expenditures for each appliance is totaled to get the total number of measures installed.

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5.20 Dalhoff Associates, LLC

APPENDIX A -- CLIENT CHARACTERISTICS

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Household characteristics										
Quarterly gross income	\$3,911	\$4,002	\$4,190	\$4,130	\$4,344	\$4,355	\$4,286	\$4,406	\$4,600	\$6,691
Average members	2.9	2.8	2.8	2.9	2.9	2.8	2.7	2.7	2.7	2.7
Percentage of households with:										
Elderly	32.6	31.5	34.2	24.0	29.1	29.4	30.8	28.9	31.3	34.4
Handicapped	43.1	42.7	35.7	25.4	32.9	30.1	32.6	31.3	30.6	34.1
Young children	18.7	21.5	21.5	18.6	25.2	21.9	20.1	22.4	19.4	17.4
Housing type (%)										
Single family home	90.7	87.7	87.9	82.6	89.6	87.3	84.8	87.4	88.4	88.1
Mobile home	7.8	7.5	9.9	7.6	10.0	10.2	11.9	10.6	8.6	7.9
Duplex	0.6	0.1	0.3	0.3	0.1	0.7	3.2	1.9	2.8	3.9
Three+ unit apartment	0.4	1.3	1.0	6.8	0.3	1.8	0.1	0.1	0.2	0.1
Rent a room	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown/other	0.6	3.5	1.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0
Heating system type (%)										
Natural gas	84.3	85.8	85.6	82.7	81.0	80.8	80.3	84.2	86.7	85.4
Propane	11.4	10.1	9.3	11.9	12.9	13.3	12.3	9.2	8.1	8.6
Fuel oil	0.6	0.7	0.3	0.8	0.8	0.8	0.9	0.2	0.1	0.5
Electricity	3.5	3.3	4.7	4.5	5.4	5.1	6.4	6.4	5.2	5.5
Other	0.2	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Air conditioning type (%)										
Central	56.3	52.5	55.3	54.1	58.7	57.3	60.2	63.6	62.0	62.6
Room	8.7	34.6	32.5	31.4	27.8	30.4	29.4	26.3	29.5	28.0
None or Missing Data	35.0	12.8	12.2	14.5	13.6	12.3	10.4	10.1	8.5	9.4
Blower door readings (average cf	m50)									
Pre	3,639	3,608	3,374	3,281	3,294	3,454	3,281	3,437	3,429	3,420
Post	2,216	2,215	2,120	2,040	2,054	2,139	2,053	2,100	2,148	2,565

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APPENDIX B -FIGURE DATA

Figure 4.4 First Very Factor, Covince (About). December											
Figure 1.1 First Year Energy Savings (therms) – Program 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016											
Heating System Work	110744	114444	173277	286866	286414	192441	102711	116295	113515	107412	
Infiltration Reduction	28699	26915	37383	54194	59030	35991	24403	24864	22482	20948	
Insulation	236878	225799	307272	480401	494564	333793	197200	197846	184203	148756	
Light/Water Heat/Other Utilit	12845	7229	11235	17070	16057	9698	7726	6002	6062	4403	
Water Heater Replacement	19267	17880	22830	44509	54904	32819	25296	28290	33942	29679	
Whole House Ventilation	1320,	1,000	22000	505	3.30.	02013	23230	20230	-2392	-4936	
Trible House Terrination									2002	.550	
Figure 1.2 First Year Energy Savings (kWh) – Program											
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Heating System Work	2556	2159	3693	6770	8324	4975	3937	186516	201190	185546	
Infiltration Reduction	61080	53435	81711	146544	150295	59937	39935	46035	32037	41401	
Insulation	764432	690330	1101156	1779971	1811722	759702	466832	466307	358537	446239	
Light/Water Heat/Other Utilit	1527057	1195736	1799651	2589000	2734566	947748	596538	567195	572018	371009	
Water Heater Replacement	34466	9621	9359	15535	19171	7824	12343	14023	15089	17269	
Whole House Ventilation									-24538	-59517	
Figure 1.3 Overall Program Exp	enditures										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Heating System Work	2743404	2575473	3699209	6943168	8182168	5189193	3123974	3465461	3376066	3390913	
Infiltration Reduction	774027	725427	1139440	2142574	2357653	1476133	1002359	1041087	1005719	1182412	
Insulation	3709790	3848467	6258426	10920427	12616772	7584763	4317731	4509492	4279518	4188388	
Light/Water Heat/Other Utilit	782202	611081	838645	1198884	1233806	720138	424488	356538	327532	328738	
Other	812863	771670	1416454	3151309	2584355	1988982	1752150	1700878	2151835	1982511	
Repair	919454	930825	1476901	2348113	2405336	1491583	1039839	971976	785187	930041	
Support	3501826	3550464	5626121	9459046	8932316	5818840	4656124	4864035	4756716	5302237	
Water Heater Replacement	570378	521733	777795	1673951	2426666	1527656	1034375	1316775	1562901	1579574	
Whole House Ventilation					687151	648556	367224	488871	368924	1018951	
Figure 1.4 Average Program Ex											
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Heating System Work	1400	1400	1370	1640	1800	1750	1690	2080	2230	2302	
Infiltration Reduction	400	390	420	480	520	500	540	620	660	803	
Insulation	1890	2090	2320	2420	2780	2550	2330	2710	2830	2843	
Light/Water Heat/Other Ut	400	400	310	270	270	240	230	210	220	223	
Other	410	350	520	600	690	670	950	1020	1420	1346	
Repair	470	500	550	520	530	500	560	580 2920	520	631 3600	
Support	1790	1920	2080	2100	1970	1960	2520		3140	1072	
Water Heater Repl Whole House Ventilation	290	280	290	370	540 150	510 220	560 200	790 290	1030 240	692	
Whole house vertilation	7048	7336	7864	8392	9258	8901	9577	11227	12295	13512	
	7046	7330	7004	0332	3230	0301	9377	11227	12293	13312	
Figure 1.6 First Year Client Fuel	Cost Saving	s (Nominal	Dollars)								
Dare 1.0 i ii st i cai chent i dei	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Whole House Ventilation	2007	2000	2003	2010	2011	-012	2013	2017	-5593	-12094	
Heating System Work	163289	162531	194435	347960	371197	227712	121871	129924	123290	114855	
Infiltration Reduction	47058	42514	50567	79880	84236	43906	29920	28584	23482	23425	
Insulation	388576	372028	438803	731293	759964	424194	256624	234798	199673	183128	
Light/Water Heat/Other Ut	142502	110391	164826	264515	280880	103539	66702	63990	67400	45384	
Water Heater Replacement	31336	28086	26646	49095	63944	37826	29556	31404	35593	31142	
Trace regional field	32330	20000	20040	.5555	333 17	3.320	23330	32.34	55555	5-1-72	

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Figure 1.8 First Year Energy Savings (therms) – Utility only											
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Heating System Work	64915	68807	67873	77401	111218	67910	60813	70795	67323	69667	
Infiltration Reduction			3350	4425	10340	5358	5129	5467	4923	4784	
Insulation	172022	161451	147574	123140	207156	131917	131486	132525	119370	102315	
Light/Water Heat/Other Utilit	8551	4680	5107	4134	6809	4029	4604	3911	3852	2809	
Water Heater Replacement	6664	7333	7808	10499	25346	13943	15335	15826	18230	17885	
Figure 1.9 First Year Energy Savings (kWh) – Utility only											
rigure 1.5 riist real Energy sav	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Heating System Work	146	2000	832	536	3286	417	224	64339	66083	71506	
Infiltration Reduction	26	13	7456	11035	18659	7535	6267	9268	8069	8430	
Insulation	501977	465814	491564	497304	613470	264752	237590	282915	212946	283722	
Light/Water Heat/Other Utilit	867050	720681	705236	704991	922461	347294	336976	344858	350640	218339	
Water Heater Replacement	16686	3727	5779	8485	11516	4774	3587	5753	6780	9119	
Figure 1.10 Utility Expenditure	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Heating System Work	1126270	1099188	1052918	1207970	2011	1176515	1200207	1557590	1520693	1594196	
Infiltration Reduction	29	29	72138	142164	288225	173869	172746	198737	204838	212265	
Insulation	2151627	2238735	2417435	2285914	3753358	2295748	2306634	2528094	2353124	2422997	
Light/Water Heat/Other Utilit	407230	327658	291378	296528	375480	249184	227782	200560	188571	180770	
Other	71349	63409	51664	60862	128109	72842	62892	107646	124082	147766	
Repair	181204	170974	163350	104189	157260	96832	104157	129832	121538	123880	
Support	447880	463990	495431	458520	706131	420502	466296	564572	523448	602760	
Water Heater Replacement	156738	161764	193094	272140	702797	414525	481837	597828	762163	849809	

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